COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Record No. 1971/50

Minor Metalliferous Investigations, Northern Territory Resident Geological Section

MINOR METALLIFEROUS INVESTIGATIONS,

NORTHERN TERRITORY

by

Resident Geologists

Record 1971/50

MINOR METALLIFEROUS INVESTIGATIONS

NORTHERN TERRITORY RESIDENT GEOLOGICAL SECTION.

RECORDS 1971/50

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REPORT ON VISIT TO A.P. 2083, KATHERINE AREA

by

M.R. Daly

Record 1971/50

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REPORT ON VISIT TO A.P. 2083, KATHERINE AREA

- by -

M. R. DALY

INTRODUCTION

At the request of the lessee, a brief visit was made on September 3, 1969 to A.P. 2083 to inspect iron mineralisation and a possible gossan. Three samples from the gossan yielded high geochemical values. A further 8 samples were collected on October, 22, 1969.

The Authority to Prospect area is 37 sq. miles in extent and is located about 12 miles E.N.E. of Katherine (plate 1). Access can be gained via the road to Katherine Gorge.

GEOLOGY

The general geology is depicted on the Katherine 1:250,000 Geological Series Sheet. The area is occupied by sediments of the Burrell Creek and Kambolgie formations and acid to intermediate volcanics. Rocks of Proterozoic age are strongly faulted.

Two fracture systems, one trending north north west and the other west are infilled predominately with quartz, quartz-hematite and rare small lenses of medium-high grade hematite. The veins form prominent ridges (plate 2). Sediments adjacent to the faults are strongly brecciated and silicified.

In all, eleven samples were taken from the 'gossanous' cap rock (plate 2 for locations). The following are the assay results: (values in p.p.m.)

Sample Number	Cu	Pb	Zn	Bi	Ni
1	<100	<100	1400		
2	500	300	1600		
3	5,400	<100	2900		
4	50	240	83	<40	880
5	275	940	93	<40	550
6	900	910	50	200	140
7	185	10,000	440	<40	150
8	157	1,300	150	"	880
9	141	230	135	"	1,000
10	25	120	43	"	880
11	55	140	135	"	840

.../2

Except for number 3, the samples were from quartz-limonite veins, many with a cellular texture. High Pb, Cu and Ni values indicate some of the cavities could be the result of the leaching of sulphides. However, sulphide mineral casts could not be distinguished.

Sample 3 was from poorly outcropping sheared and brecciated ferruginous, calcareous rock, possibly the alteration product of a basic igneous rock. Small patches of malachite occur along fractures.

CONCLUSIONS AND RECOMMENDATIONS

The iron mineralisation has no economic significance because of the small quantity, the general low grade and the remoteness of the locality.

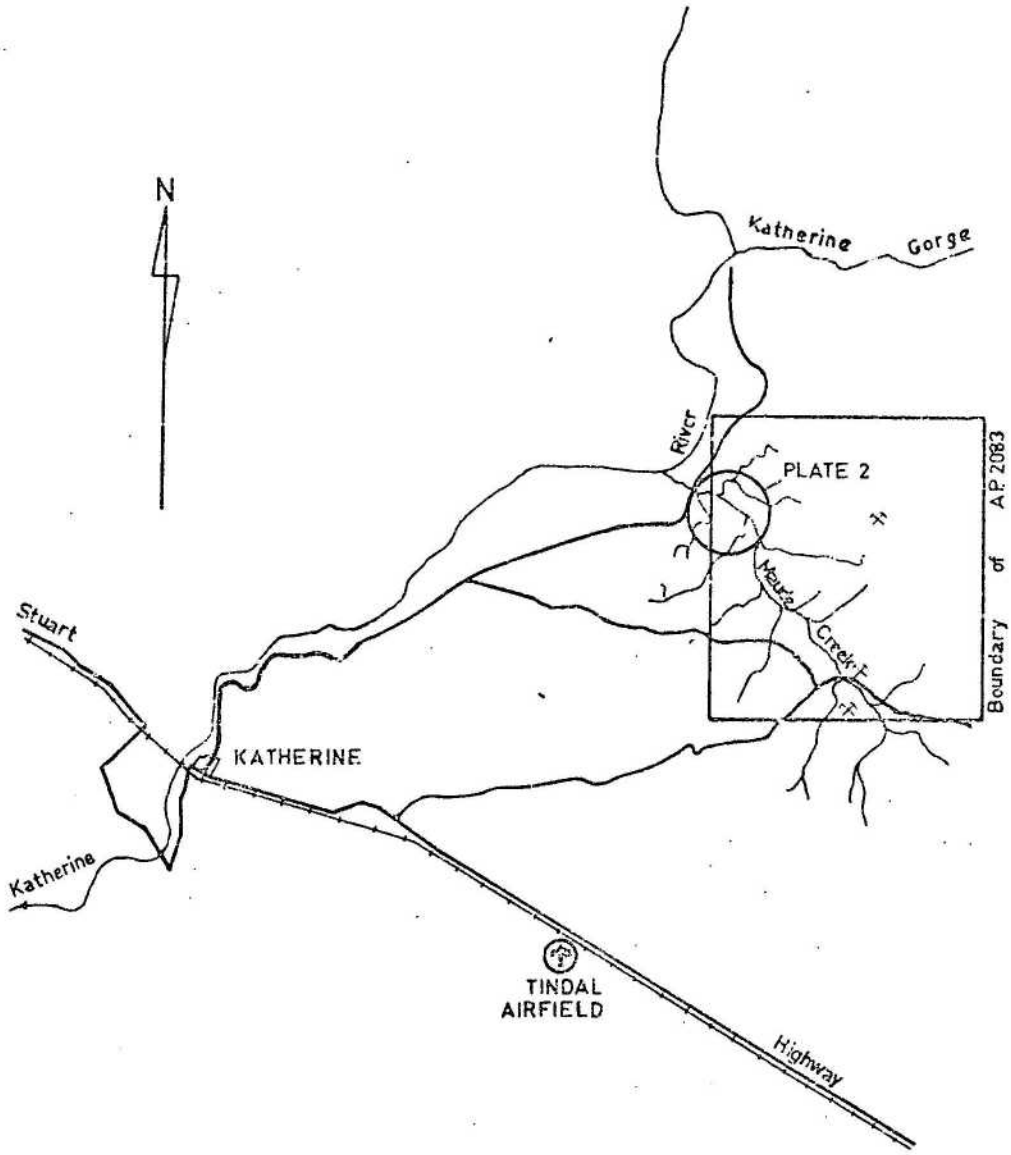
The most significant geochemical results are probably from samples 2, 6, 7 and 8; in particular the 1% lead value of sample 7 is anomalous.

High geochemical results derived from sample 3 are probably not particularly significant, since basic volcanics of the Antrim Plateau Volcanic Series in the Katherine area are commonly mineralised with small amounts of copper.

Approximately 15 wagon drill holes should be drilled in the area of samples 2, 6, 7 and 8 to determine if the high geochemical values are associated with significant mineralisation within the quartz-limonite veins.

REFERENCE

Randal, M. A., 1963 - Katherine, N.T. 1:250,000 Geological Series. Bur. Min. Resour. Aust. Explan. Notes SD/S 3-9.



LOCALITY MAP

FAULTS & SAMPLE POINTS – A.P. 2083

KATHERINE AREA

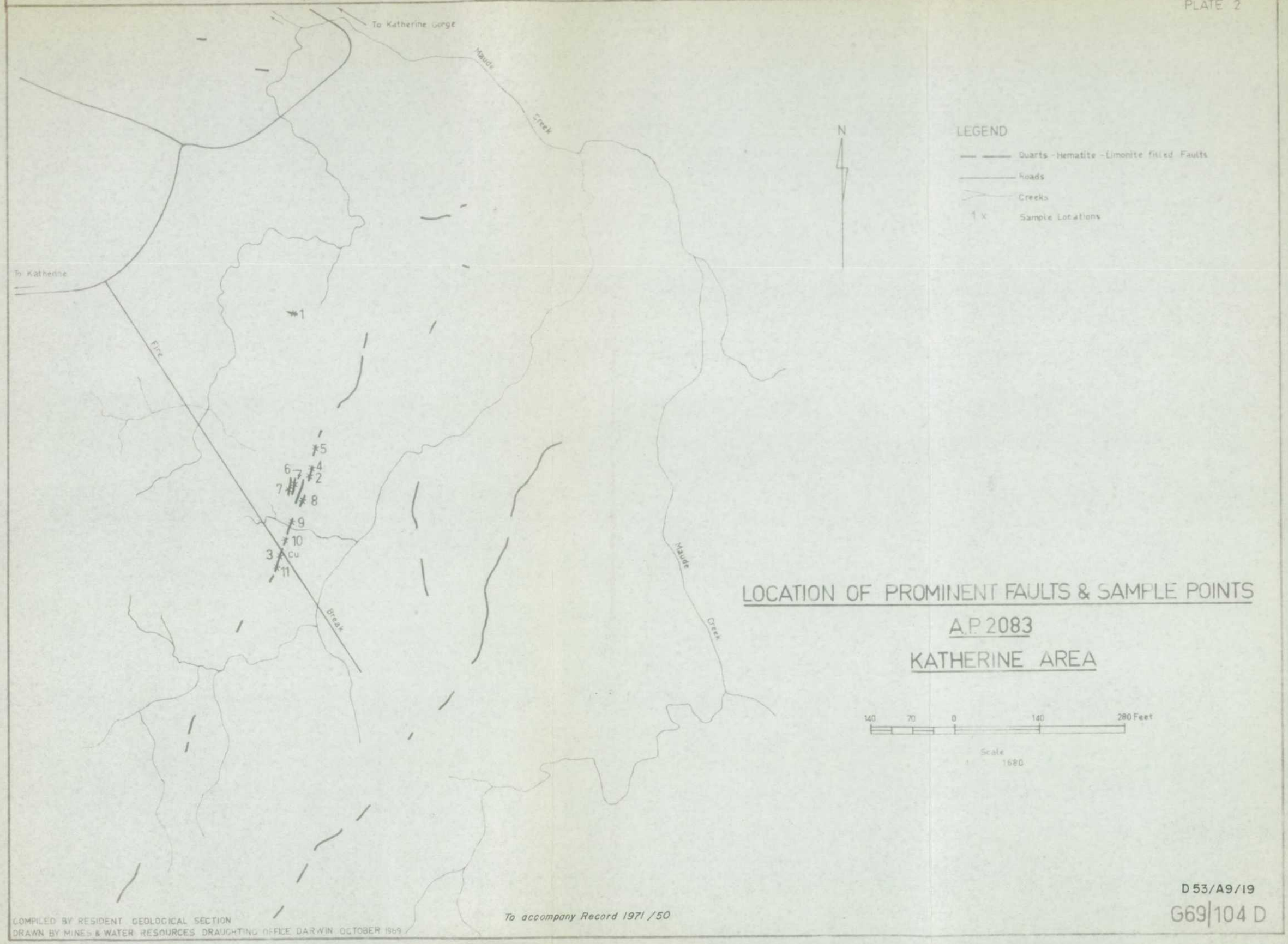
5 0 5 Miles

SCALE 1 : 250,000

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURSES BRANCH DRAFTING OFFICE DARWIN OCTOBER 1969

D53/A9/18
G69/103E

Records no 1971/50


To Katherine Gorge
Maude Creek
To Katherine
Fire Break
Maude Creek
N
LEGEND
Quartz - Hematite - Limonite filled Faults
Roads
Creeks
1 x Sample Locations
1
5
6
7
4
2
8
9
10
3
Cu
11
LOCATION OF PROMINENT FAULTS & SAMPLE POINTS
A.P. 2083
KATHERINE AREA
140 70 0 140 280 Feet
Scale 1:680
D 53/A9/19
G69/104 D
COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES DRAUGHTING OFFICE DARWIN OCTOBER 1969
To accompany Record 1971/50

DIAMOND & PERCUSSION DRILLING - LONE STAR AREA.

TENNANT CREEK

by

M.R. Daly

Record 1971/50

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SUMMARY

One diamond drill hole, designated D.D.H.5 and 57 percussion (or wagon) drill holes were put down to test the area north of the Lone Star Mine workings.

D.D.H.5 did not intersect ironstone or significant mineralisation unrelated to ironstone.

Ironstone was intersected in three of the percussion drill holes. Anomalous geochemical values for copper were obtained in two drill holes, for copper and gold in one drill hole, and for copper, gold and bismuth in another.

The highest assays for copper (2.65%) and gold (2.6 dwts/ton) were from samples at down hole depths of 110 feet and 120 feet in wagon drill hole 17A.

Drilling results indicate that the lower portion of the Lone Star Mine ironstone has been displaced approximately 900 feet to the northwest by the Minogue thrust fault.

It is recommended that the area be released from Government Reservation.

Future exploration should be directed towards investigation of mineralisation, principally copper, in the vicinity of Lone Star Mine, particularly to North and North-east of the shaft. This could be accomplished by surface percussion drilling and long hole drilling from existing underground workings.

The mineralisation is shallow, but is likely to be patchily distributed and low in grade and tonnage.

INTRODUCTION

The Lone Star Mine is located six miles North-North-East of Tennant Creek (Plate 1). An access track leads from the Peko Road opposite the Central Government Battery for approximately seven miles to Lone Star and thence to the Gigantic and Blue Moon Gold Mines.

Drill holes were sited at the base of the Lone Star hill and on the flat to the north to determine whether the orebody extends in that direction. No attempt was made to evaluate the mineralisation associated with the existing underground workings.

D.D.H.5 was sited to test the area between the Lone Star Mine and the ironstone located by diamond drilling 900 feet north-west of the shaft where previous percussion drilling produced anomalous copper and gold.

Percussion drilling was used to obtain weathered rock samples beneath the covering of superficial deposits and for detecting shallow ironstone.

DETAILS OF DRILLING

Between 1951 and 1954, diamond drill holes 1', 2' and 3' were drilled immediately north of the Lone Star open cut mine. The new shaft was sunk 15 feet east of D.D.H. 2' intersecting some high gold values (Jones, 1956).

Between 1961 to 1964, four diamond drill holes were put down to investigate a magnetic anomaly 900 feet north-west of the Lone Star Mine. The anomaly was located during an A.G.G.S.N.A. survey (Daly, 1957). D.D.H.1 was described by Barclay (1963), D.D.H.2 by Dunn (1964) and D.D.H.'s 3 and 4 by Yeaman (1964).

The following is a summary of previous drilling results. Drill hole locations are shown on Plate 2.

Drill Hole No.	Collar Angle, Depth.	Ironstone Intersection (Down Hole Depths)	Mineralisation
D.D.H.1'	90°, 91'	65' - 78'	Nil Cu; Au to 2.1 dwts/ton.
D.D.H.2'	80°S, 195'	128' - 164'	6.2% Cu (144' - 147'); 3.1 dwts/ton Au (128' - 135')
D.D.H.3'	90°, 180'	Nil	No significant Cu, Au.
D.D.H.1	90°, 648'	472' - 584'	5.4% Cu (509' - 525'); No significant Au.
D.D.H.2	69°S, 650'	591' - 603'	No significant Cu, Au.
D.D.H.3	90°, 653'	421' - 430'; 455' - 485'	1.1% Cu (504 - 507'); 1.05% Cu (563' - 568'); 1.1% Cu (596' - 606'); 1.25% Cu (635' - 640'); No significant Au.
D.D.H.4	90°, 656'	464'6" - 634' (Mostly disseminated)	1.25% Cu (483'6" - 485'6") No significant Au.

At the end of 1967, 10 wagon drill holes, spaced 100 ft. apart, were put down in an approximate east-west line north of the main shaft.

At that stage, no further wagon drilling was possible and a diamond drill hole was sited in the vicinity of W.D.H.'s 7 and 8 which intersected zones of anomalous copper and gold. This hole was planned to test the possible extension of the Lone Star ore body to the north-west.

Between December 1968 and March 1969 a further 47 wagon drill holes were drilled. In addition to the normal drill holes, at five sites angle holes with depressions at approximately 70°S were completed. These were designated W.D.H.'s 14A to 17A and 19A.

Drilling was carried out by Mines Branch, Northern Territory Administration.

GEOLOGY.

The geology and topography in the vicinity of the Lone Star Mine was described by Ivanac (1954), Barclay (1963), and Crohn and Oldershaw (1965).

Plate 2 is an extension of Ivanac's map to the north-west. Locations of drill holes and underground workings from the main shaft have been included.

Outcrop is mainly of fine to medium textured sandstone with slate and silty-slate interbeds. Beds strike 170° - 280° and dip approximately 75° to the south. Cleavage strikes approximately east-west and dips 80° - 90°. Graded bedding observed in one outcrop suggests that the strata is not overturned.

D.D.H.5 intersected a succession composed predominately of sandstones and shales cut by lamprophyre dykes and veins, and by thin quartz veins (Appendix I).

The silty slate outcropping near W.D.H. 26 can be correlated with that intersected at 91' in D.D.H.5.

Below 100 feet there is a marked change in the dip of the strata (75° to 35°). At approximately 115 feet, the very sheared zone with low core recovery probably represents the Minogue Fault which forms the lower limit of the mine ironstone. If the fault dip steepens slightly, the magnetite body in the northwest could be the faulted remnant of the Lone Star hematite - magnetite body.

Numerous lamprophyre dykes and veins were intersected in D.D.H.5. Thin sections prepared from the lamprophyre reveal a predominance of biotite or chlorite pseudomorphs after biotite, with potash feldspar, some pyroxene, quartz and iron oxides. Two sediment-lamprophyre contacts were observed; at 191'3", the contact dips at 45°, approximately parallel to the bedding; at 189' the contact transgresses the bedding and dips at 57°.

No ironstone was intersected. The only mineralisation apparent in the core is pyrite and hematite infillings of some fractures.

Ironstone was intersected in W.D.H.1 from 160' to 200' in W.D.H.7 from 190' to 200', and in W.D.H.17A from the downhole depths 110' to 150'. W.D.H.17A contains visible copper mineralisation as malachite between 110' and 130'.

The Lone Star Mine ironstone dips about 50° to the north.

ASSAY RESULTS

A full list of assay results is included in Appendix II. Assays were carried out by the Assay Laboratory, Mines Branch, Northern Territory Administration, Darwin.

The entire core from D.D.H.5 was scraped. No significant mineralisation was intersected. However, results show anomalous lead values, with a peak of 7,500 ppm between 30' and 40'.

The most significant results from the Wagon drilling are listed below. All intervals are given as downhole depths:

W.D.H.1:

150' - 160'	0.7% Cu
160' - 170'	1.4% Cu

W.D.H.7:

170' - 180'	1.8 dwts/ton Au
180' - 190'	0.28% Bi

W.D.H.17A:

110' - 120'	2.65% Cu, 2.6 dwts/ton Au.
120' - 130'	1.55% Cu, 1.4 dwts/ton Au.
130' - 140'	0.8% Cu.

CONCLUSIONS & RECOMMENDATIONS.

The quartz-hematite-magnetite lode of the Lone Star Mine has no extension in the north-west direction.

The sub-surface ironstone body to the north-west may be the lower portion of the mine ironstone, displaced by the Minogue thrust fault.

Percussion drilling did not extend deep enough to thoroughly test any ironstone extension to the north-east.

No significant gold mineralisation was intersected and copper was fairly low in grade.

Although the mineralisation is shallow, it is likely to be patchily distributed.

As no major extension of the Lone Star ore body was located, it is recommended that the Government Reservation be relinquished.

Detailed exploration from the existing underground workings may produce some mineable ore.

REFERENCES

IVANAC, J.F., 1954 - The Geology and Mineral Deposits of Tennant Creek Goldfield, N.T. Bur. Min. Resour. Aust. Bull. No. 22.

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BARCLAY, J., 1963 - Lone Star Diamond Drill Hole, Tennant Creek. Bur. Min. Resour. Aust. Rec. No. 15.

DUNN, P.G., 1964 - Diamond Drill Hole No. 2, Lone Star Prospect, Tennant Creek. Bur. Min. Resour. Aust. Rec. No. 186.

YEAMAN, W.S., 1964 - Report on Diamond Drill Hole No. 3, Lone Star Prospect. Bur. Min. Resour. Aust. Rec. No. 186.
Report on Diamond Drill Hole No. 4. (Unpub.)

CROHN, P.W. & OLDERSHAW, W., 1965 - The Geology of the Tennant Creek One-Mile Sheet Area, N.T. Bur. Min. Resour. Aust. Rep. No. 83.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING, LONE STAR AREA — REMARKS: SCALE: 1" = 10'

HOLE No.: D.D.H. 5 — CO-ORDINATES: — R.L. GROUND:

LOCATION: 340' @ 295° MAG. FROM MAIN SHAFT — ANGLE FROM HORIZONTAL: 90° — DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
NO CORE RECOVERED				NIL			
10'							
SANDSTONE & SHALE interbeds: purplish, pink & fawn.				27%			
20' Sandstone commonly graded, fine → med.-coarse down hole. Cleavage well developed in fine sediments, 3°-10° to C.A.: highly fractured.				96%			
30'				100%			
Shale/siltstone interbeds at: 16'-16'2": b.c. = 15°; 18'-33'6": intermixed & F-Sandstone; 38'-38'3"; 38'6"-38'9"; 42'-43'; 47'6"-48'; 51'-51'3"; 62'-62'6"; 75'-76'; 76'6"-77'; 81'-83': & some Sandstone.				100%		Surface mapping indicates dip of beds to South 4 ~ 75°S	
				80%			
40'				80%			
				75%			
50'				97%			
				100%			
				100%			
60'				79%			
				100%			
				69%			
70'				90%			
				92%			
80'				78%			
				88%			
90'							
SHALE/SILTSTONE & minor Sandstone. Well developed slaty cleavage, 5°-10°.				100%			

DRILL NO.: TYPE:

CASING IN HOLE DURING DRILLING

EXPLANATION: All angles measured to Core Axis (C.A.)

REFERENCES: SHALE; SANDSTONE (F: FINE, M: MEDIUM, C: COARSE); LAMPROPHYRE; Q QUARTZ VEIN

DRILLER: MINES BRANCH
COMMENCED: 21-2-68
COMPLETED: 2-7-68

HEAD OFFICE
LOGGED BY: M.R. DALY
DRAWN BY: M.R.D.
CHECKED BY:
SHEET 1 OF 5
DRAWING NO.:

E 53/A14/205 G69/97E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING, LONE STAR AREA. REMARKS:

HOLE No.: D.D.H. 5 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 85.5° @ 150' DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
LAMPROPHYRE: Light brown; very weathered, soft, crumbly; original biotite completely altered to vermiculite.				56%			
				100%			
110'							
SANDSTONE: very fractured, sheared & some quartz veining.				56%			
				26%			
				92%			
120'				83%			
				100%			
				67%			
				100%			
				88%			
130'				84%			
SANDSTONE & SOME SHALE: purplish: numerous thin quartz veinlets.				92%			
				100%			
140' Shale beds at: 145'-145'6"; 148'6"-149'6"; 149'3"-170': b.c. = 55°				97%			
				100%			
150'				100%			
				100%			
				93%			
160'							
				100%			
170'						Base of oxidation	
SHALE & some SANDSTONE: purplish well developed slate cleavage 20°-30°:				92%			
180' Sandstone at: 171'6"-171'9"; 178'9"-179'; 182'-182'3"- b.c. = 40°; 183'6"-184'.				99%			
LAMPROPHYRE: reddish brown & green patches				100%		biotite → chlorite + Fe ox.	
SHALE / SANDSTONE: b.c. = 45°						lower contact ~ 33°.	
LAMPROPHYRE: less weathered than above							
190' FINE SANDSTONE: purple-grey; thin hematite veins 45° to C.A.				100%			
LAMPROPHYRE: upper contact 45°; sheared & fragmented at base.							
SLATE & SOME SANDSTONE: dark grey, silicified. bedding ∠ = 45°							

DRILL NO.: TYPE:	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY: M.R. DALY; DRAWN BY: M.R.D.; CHECKED BY:
DRILLER: COMMENCED: COMPLETED:	REFERENCES	SHEET 2 OF 5; DRAWING NO.

GD'30

E 53/A14/205

G69/98E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT DIAMOND DRILLING, LONE STAR AREA REMARKS

HOLE No. D.D.H. 5 CO-ORDINATES R L GROUND

LOCATION ANGLE FROM HORIZONTAL 89° @ 300' DIRECTION

DESCRIPTION OF CORE	R L / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
4" LAMPROPHYRE VEINS @ 205'8", 212'.							
Shear zones 205'-211', 223'-227'; hematite on many fracture surfaces.				50% 8%			
210'							
220'				100%			
LAMPROPHYRE: reddish + greenish black.							
230' Biotite partly altering to chlorite + Fe ox; some K-feldspar. Fine grained at margins, coarse in centre.				95%			
240'							
FINE SANDSTONE & MINOR SHALE/SILTSTONE interbeds; dark gray; bedding 45°-50°, cleavage 55°, both in approx. same sense. Fracture zones 242'-243'; 245'-246'4"; 249'6"-251'- some hematite. Pyrite + hematite in quartz vein @ 251'							
250' Chloritic near lower contact.							
LAMPROPHYRE: dark greenish black; biotite altered to chlorite, K-feldspar, little quartz, Fe oxides. Medium grained in middle, fine at margin. Quartz vein (1") @ 254							
260' CHLORITIC FINE SANDSTONE, some SLATE: dark greenish black. hard, silicified, well fractured, much quartz veining. Hematite along fractures; pyrite scattered throughout, abundant 266'-268'. chalcopyrite 258'. Sheared 257'-257'4"; 261'-264'. 265'-269': less chlorite, lighter in colour 269'-284': some m-c-SANDSTONE.				100%			
270'							
280'				75			
290'				100%			

DRILL NO	EXPLANATION	HEAD OFFICE
TYPE	CASING IN HOLE DURING DRILLING	LOGGED BY M. R. DALY
	REFERENCES	DRAWN BY M. R. D.
DRILLER		CHECKED BY
COMMENCED		SHEET 3 OF 5
COMPLETED		DRAWING NO

GD150

E53/A14/205

G69/99E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING, LONE STAR AREA — REMARKS:

HOLE No: D.D.H. 5 — CO-ORDINATES — R.L. GROUND

LOCATION — ANGLE FROM HORIZONTAL: 89° @ 300' — DIRECTION

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
310' 312'-314': Sheared, very chloritic, contorted quartz veins. 316'6"-322'6": Sheared, chloritic, quartz injected zones. 320' 330'				95%			
340' SLATE: black, fractured, slickensided.						pyrite in some fractures	
FINE SANDSTONE: hard, dark grey							
SLATE & MINOR SILTSTONE/FINE SANDSTONE. 350' Hard dark grey-black, commonly with purplish tint. Generally well developed cleavage: ~28° @ 351'; ~35° @ 398'; ~35° @ 448'. 360' Numerous thin quartz veins throughout. 370' Highly fractured & sheared with chlorite in the following zones: 347'-351'6"; 353'-353'6"; 368'-368'6"; 370'-372'; 391'-393'; 414'-416'; 421'-422'; 435'-444'; 450'-452'5". 380' 390'				100% 59%			

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. DALY; DRAWN BY M.R.D; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES	SHEET 4 OF 5; DRAWING NO.

GD130

E 53/A14/205

G69/100E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT DIAMOND DRILLING, LONE STAR AREA REMARKS

HOLE No D.D.H. 5 CO-ORDINATES R.L. GROUND

LOCATION ANGLE FROM HORIZONTAL 83°@450' DIRECTION

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
410'							
420'				100%			
430'							
440'				75%			
				100%			
450'							
END OF HOLE.							
460'							

DRILL NO.	EXPLANATION	HEAD OFFICE
TYPE	CASING IN HOLE DURING DRILLING	LOGGED BY M.R. DAY
		DRAWN BY M.R.D.
DRILLER	REFERENCES	CHECKED BY
COMMENCED		SHEET 5 OF 5
COMPLETED		DRAWING NO

GD130

E53/A14/205 G69/101E

APPENDIX II

GEOCHEMICAL RESULTS, LONE STAR

D.D.H.5

(Au assays in dwts/ton; Cu, Pb, Zn, Bi values in p.p.m.)

Feet	Cu	Pb	Zn	Bi	Au
10	15	2,600	14	<20	<0.3
20	15	1,300	12	"	<0.4
30	40	7,500	34	"	<0.15
40	20	3,600	26	"	<0.15
50	15	900	35	"	<0.15
60	15	3,000	23	"	<0.15
70	15	1,500	24	"	<0.15
80	60	1,500	52	"	<0.3
90	35	480	31	"	<0.3
100	195	790	240	"	<0.15
10	45	580	200	"	<0.3
20	175	540	50	"	<0.15
30	<5	1,200	54	"	<0.3
40	40	100	50	"	<0.6
50	60	560	42	"	<0.4
60	35	100	42	"	<0.4
70	20	670	30	"	<0.15
80	20	530	40	"	<0.15
90	20	880	220	"	<0.15
200	25	560	63	"	<0.15
10	10	370	26	"	<0.4
20	80	400	100		<0.4
30	110	110	120	"	<0.15
40	45	650	47	"	<0.3
50	105	730	14	"	<0.3
60	110	630	20	"	<0.3
270	70	1,100	19	"	<0.3
280	170	480	15	"	<0.3
90	850	460	18	"	<0.4
300	140	790	24	"	<0.3
10	70	540	20	"	<0.3

Appendix II cont'd.

Feet	Cu	Pb	Zn	Bi	Au
20	300	540	42	<20	<0.3
30	850	300	73	"	<0.15
40	90	390	32	"	<0.3
50	15	270	45	"	<0.3
60	15	240	34	"	<0.3
70	30	280	64	"	<0.3
80	15	190	48	"	<0.3
90	15	270	83	"	<0.3
400	15	210	86	"	<0.4
10	40	210	81	"	<0.3
20	15	210	60	"	<0.15
30	25	440	170	"	<0.6
440	15	280	100	"	<0.15

N.B. Detection limits for Au vary from 0.6 - 0.15 dwts/ton, depending on amount of sample available.

WAGON DRILL GEOCHEMICAL RESULTS

(Au assays in dwts/ton; Cu, Pb, Zn, Bi, Mo, Co, Ni results in p.p.m.)

	Feet	Cu	Pb	Zn	Bi	Mo	Au
No.1	0	35	5	10	40	<40	Nil
	10	30	5	15	<20	"	"
	20	35	5	10	<20	"	"
	30	45	5	10	<20	"	"
	40	35	<5	10	<20	"	"
	50	40	<5	10	<20	"	"
	60	35	10	15	<20	"	"
	70	85	5	15	<20	"	"
	80	212	<5	20	<20	"	"
	90	175	5	15	<20	"	"
	100	170	10	15	<20	"	"
	110	27	5	10	<20	"	"
	120	195	20	60	<20	"	"
	130	142	<5	70	<20	"	"
	140	950	5	50	<20	"	"
	150	7,000	20	100	50	"	"
	160	14,000	40	100	50	"	"
	170	4,000	10	40	40	"	"
	180	3,250	30	100	80	"	"
	190	3,350	40	100	200	"	"
No.2	0	45	5	15	<20	"	"
	10	30	5	20	<20	"	"
	20	60	10	25	<20	"	"
	30	45	5	20	<20	"	"
	40	70	10	25	<20	"	"
	50	55	5	25	<20	"	"
	60	20	5	25	<20	"	"
	70	30	10	25	<20	"	"
	80	30	5	40	<20	"	"
	90	40	20	30	"	"	"
	100	40	5	20	"	"	"
	110	65	5	25	"	"	"
	120	105	5	40	"	"	"
	130	195	5	45	"	"	"
	140	210	5	50	"	"	"
	150	70	10	50	"	"	"
	160	40	20	100	40	"	"
	170	55	20	95	40	"	"
	180	120	20	75	<20	"	"
	190	85	40	100	80	"	"
No.3	0	215	60	40	40	"	"
	10	15	10	15	<20	"	"
	20	10	10	15	"	"	"
	30	5	20	15	"	"	"
	40	<5	"	15	"	"	"
	50	<5	"	20	"	"	"
	60	5	"	15	"	"	"
	70	500	"	25	"	"	"
	80	45	"	30	"	"	"
	90	60	"	25	"	"	"

	Feet	Cu	Pb	Zn	Bi	Mo	Au
No.3	100	55	20	25	<20	<40	Nil
Cont'd	110	100	"	30	"	"	"
	120	135	10	30	"	"	"
	130	400	10	65	"	"	"
	140	475	20	85	"	"	"
	150	55	20	100	"	"	"
	160	20	20	75	< "	"	"
	170	105	20	75	"	"	"
	180	950	40	200	40	"	"
	190	1,500	50	250	100	"	"
No.4	0	5	20	20	20	"	"
	10	10	20	15	"	"	"
	20	5	20	15	"	"	"
	30	10	20	15	"	"	"
	40	5	20	10	"	"	"
	50	5	10	5	"	"	"
	60	5	"	10	"	"	"
	70	20	"	15	"	"	"
	80	25	"	10	"	"	"
	90	35	"	15	"	"	"
	100	35	"	10	"	"	"
	110	80	"	15	"	"	"
	120	175	"	15	"	"	"
	130	385	"	40	"	"	"
	140	275	"	20	"	"	"
	150	120	20	45	"	"	"
	160	40	20	30	"	"	"
	170	40	10	30	"	"	"
	180	40	"	30	"	"	"
	190	240	"	10	"	"	"
No.5	0	5	"	15	"	"	"
	20	5	"	15	"	"	"
	30	5	"	10	"	"	"
	40	5	"	10	"	"	"
	50	5	"	10	"	"	"
	60	5	"	15	"	"	"
	70	5	"	15	"	"	"
	80	5	"	20	"	"	"
	90	10	"	15	"	"	"
	100	20	"	15	"	"	"
	110	40	"	25	"	"	"
	120	125	"	25	"	"	"
	130	120	"	25	"	"	"
	140	155	"	35	"	"	"
	150	95	"	50	"	"	"
No.6	0	20	"	10	"	"	"
	10	20	20	5	"	"	"
	20	40	10	10	"	"	"
	30	35	10	10	"	"	"
	40	30	20	10	"	"	"

	Feet	Cu	Pb	Zn	Bi	Mo	Au
No.6	50	40	10	15	<20	<40	Nil
Cont'd	60	5	10	20	"	"	"
	70	5	20	30	"	"	"
	80	5	40	45	"	"	"
	90	5	40	40	"	"	"
	100	10	40	40	"	"	"
	110	40	10	40	"	"	"
	120	95	20	50	"	"	"
	130	285	20	65	"	"	"
	140	325	10	85	"	"	"
	150	300	20	75	"	"	"
	160	315	20	75	"	"	"
	170	300	10	65	"	"	"
No.7	0	5	20	25	"	"	"
	10	10	20	25	"	"	"
	20	10	10	20	"	"	"
	30	5	10	25	"	"	"
	40	5	10	30	"	"	"
	50	5	10	30	"	"	"
	60	5	10	35	"	"	"
	70	5	10	40	"	"	"
	80	20	10	45	"	"	"
	90	30	20	100	"	"	"
	100	5	10	40	"	"	"
	110	5	10	100	"	"	"
	120	115	10	80	"	"	"
	130	245	10	75	"	"	"
	140	20	20	60	"	"	Trace
	150	550	20	90	"	"	Trace
	160	400	100	150	40	"	0.5
	170	600	20	65	40	"	1.8
	180	2,050	50	85	2,800	"	0.6
	190	750	60	65	700	"	0.4
No.8	0	<5	20	30	<20	"	Nil
	10	<5	10	45	<20	"	"
	20	<5	10	15	<20	"	"
	30	<5	20	15	"	"	"
	40	35	10	35	"	"	"
	50	10	20	15	"	"	"
	60	100	10	75	"	"	"
	70	105	10	75	"	"	"
	80	70	10	45	"	"	"
	90	60	20	40	"	"	"
	100	375	10	85	"	"	"
	110	1,000	20	150	40	"	"
	120	35	20	60	<20	"	"
	130	185	10	70	"	"	"
	140	30	10	55	"	"	"

	Feet	Cu	Pb	Zn	Bi	Mo	Au
No.9	0	<5	10	55	<20	<40	Nil
	10	<5	<5	55	"	"	"
	20	<5	10	30	"	"	"
	30	5	"	45	"	"	"
	40	5	"	40	"	"	"
	50	20	"	35	"	"	"
	60	10	"	50	"	"	"
	70	35	"	20	"	"	"
	80	20	"	25	"	"	"
	90	65	20	60	"	"	"
	100	50	10	30	"	"	"
	110	360	100	250	"	"	"
No.10	0	5	10	55	"	"	"
	10	15	20	65	"	"	"
	20	5	20	35	"	"	"
	30	5	25	35	"	"	"
	40	5	10	25	"	"	"
	50	5	10	35	"	"	"
	60	10	20	50	"	"	"
	70	15	20	50	"	"	"
	80	20	20	50	"	"	"
	90	20	20	120	"	"	"
	100	110	25	75	"	"	"
	110	35	25	65	"	"	"
	120	25	20	65	"	"	"
	130	150	25	65	"	"	"
	140	35	20	65	"	"	"
No.11	0	85	35	140	40	35	77
	10	< 5	10	7	"	<10	<10
	20	< 5	20	7	<40	"	"
	30	< 5	10	8	40	"	"
	40	10	20	16	"	"	"
	50	20	10	16	"	"	"
	60	5	10	16	"	"	<10
	70	5	10	36	"	"	30
No.12	0	10	20	26	40	<10	30
	10	< 5	"	14	"	"	<10
	20	5	10	"	< 40	"	"
	30	15	"	"	<40	"	"
	40	30	20	12	40	"	"
	50	60	10	16	<40	"	"
	60	75	"	14	40	"	"
	70	60	20	12	"	"	"
	80	55	"	11	<40	"	"
	90	60	10	"	"	"	"
	100	120	"	14	"	30	10

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.13	0	5	10	14	40	<10	<10	
	10	35	"	23	"	10	10	
	20	40	20	34	"	<10	20	
	30	20	"	"	"	10	"	
	40	10	10	30	"	<10	10	
	50	20	20	"	"	"	20	
	60	15	10	16	"	"	<10	
	70	20	20	8	"	"	<10	
	80	40	20	21	"	"	"	
	90	"	10	23	"	"	"	
	100	30	20	20	"	"	"	
	110	"	10	"	"	"	"	
	120	"	"	"	"	10	10	
No.14	0	5	10	34	40	10	10	
	10	15	"	18	"	"	<10	
	20	5	"	26	70	"	10	
	30	"	"	16	40	<10	"	
	40	"	"	14	"	10	"	
	50	"	150	20	"	<10	"	
	60	"	90	"	"	"	<10	
	70	"	35	"	"	"	"	
	80	"	75	18	"	10	"	
	90	20	20	29	"	"	10	
	100	25	"	36	"	15	<10	
	110	5	"	34	"	30	30	
	120	60	"	32	"	35	40	
	130	10	10	37	"	30	"	
No.14A	0	5	10	24	40	<10	<10	
	10	"	<10	18	"	"	"	
	20	"	10	21	"	10	"	
	30	"	"	14	70	<10	"	
	40	<5	"	16	40	15	"	
	50	15	"	12	"	<10	"	
	60	10	"	11	"	"	"	
	70	"	"	14	"	"	"	
	80	<5	"	"	"	"	"	
	90	"	20	"	"	"	"	
	100	"	10	"	"	"	"	
	110	"	"	44	"	"	"	
No.15	0	<5	10	24	40	<10	<10	
	10	5	"	11	"	"	"	
	20	<5	20	32	"	"	"	
	30	30	10	12	<40	"	"	
	40	<5	"	"	"	"	"	
	50	30	55	"	"	"	"	
	60	15	"	14	40	"	"	
	70	5	20	11	"	"	"	
	80	5	"	16	"	"	"	
	90	<5	10	12	<40	<10	<10	
	100	"	"	"	"	"	"	
	110	10	"	21	40	"	"	
	120	<5	"	23	"	25	30	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.15A	0	<5	20	45	40	<10	<10	
	10	"	10	2	<40	"	"	
	20	"	"	"	"	"	"	
	30	10	"	23	"	"	"	
	40	<5	"	5	"	"	"	
	50	15	"	"	"	"	"	
	60	<5	"	4	"	"	"	
	70	20	"	7	"	"	"	
	80	5	"	"	"	"	"	
	90	<5	20	4	"	10	"	
	100	10	"	12	"	<10	"	
	110	15	"	11	"	"	"	
No.16	0	110	20	69	40	25	120	
	10	20	10	12	"	<10	10	
	20	25	"	"	"	"	<10	
	30	20	"	7	"	"	"	
	40	"	"	9	"	"	"	
	50	10	"	5	"	"	"	
	60	15	"	9	"	"	"	
	70	25	"	"	"	10	"	
	80	"	"	11	"	"	20	
	90	95	"	14	"	"	30	
	100	"	"	"	"	30	"	
	110	110	"	20	"	<10	"	
	120	160	"	21	"	"	"	
	130	135	"	34	"	10	"	
	140	235	"	"	"	"	"	
No.16A	0	30	10	24	40	<10	20	
	10	70	"	36	"	10	"	
	20	30	"	19	"	"	"	
	30	"	<10	"	"	<10	10	
	40	20	"	17	"	"	10	
	50	30	"	12	"	10	"	
	60	"	"	13	"	<10	"	
	70	35	25	17	<40	"	10	
	80	55	15	18	40	10	"	
	90	65	"	"	"	<10	"	
	100	60	35	15	<40	"	"	
No.17	0	225	10	17	40	10	<10	
	10	30	"	12	<40	<10	"	
	20	"	"	"	"	"	"	
	30	45	15	"	"	"	"	
	40	20	"	11	"	"	"	
	50	"	"	15	"	"	"	
	60	"	10	17	40	10	"	
	70	35	"	48	"	<10	10	
	80	55	"	13	"	"	"	
	90	150	"	16	"	10	"	
	100	235	"	14	"	14	30	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.17A	0	215	25	60	40	20	20	<0.15
	10	15	10	25	"	<10	"	"
	20	10	"	20	"	"	10	0.15
	30	"	"	"	"	"	"	
	40	30	"	"	"	"	"	<0.15
	50	40	"	"	"	<10	20	"
	60	65	40	"	<40	"	"	"
	70	70	25	"	"	"	"	"
	80	"	10	"	40	"	20	"
	90	95	40	25	<40	"	10	"
	100	360	10	30	40	"	20	"
	110	26,500	55	70	55	90	40	2.6
	120	15,500	25	65	50	60	30	1.4
	130	8,000	25	70	80	60	40	0.6
	140	4,000	"	55	50	45	"	0.6
No.18	0	40	25	35	<40	10	30	
	10	15	10	15	"	"	20	
	20	25	"	20	40	<10	10	
	30	10	"	15	<40	"	20	
	40	"	"	"	40	"	20	
	50	15	25	20	<40	"	20	
	60	10	10	5	"	"	10	
	70	20	25	"	"	"	20	
	80	25	"	"	"	"	10	
	90	65	10	15	"	"	20	
	100	90	"	20	"	10	"	
	110	245	"	30	"	"	"	
	120	400	25	50	40	20	40	
	130	485	10	60	"	30	50	
	140	305	10	"	"	10	40	
	150	65	"	"	"	"	"	
	160	15	25	"	"	20	"	
	170	20	10	50	"	30	"	
	180	50	25	70	"	35	50	
	190	60	"	60	50	20	30	
No.19	0	40	25	25	40	<10	20	
	10	5	10	15	40	"	10	
	20	"	"	"	"	"	20	
	30	15	25	35	<40	10	"	
	40	"	10	30	40	<10	10	
	50	10	"	15	"	"	"	
	60	"	"	"	"	"	"	
	70	"	"	"	"	10	"	
	80	20	"	"	"	<10	"	
	90	50	20	20	"	"	"	
	100	65	"	15	"	"	"	
	110	50	"	"	"	"	"	
	120	170	"	30	"	80	20	
	130	200	10	30	40	35	20	
	140	675	"	50	"	20	"	
	150	500	"	"	<40	10	"	
	160	295	"	60	40	"	30	
	170	295	"	50	"	20	"	
	180	870	"	70	<40	35	40	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.19A	0	30	25	60	40	<10	20	
	10	25	10	30	<40	"	10	
	20	15	"	"	"	"	"	
	30	20	25	"	"	"	"	
	40	45	15	39	<40	"	"	
	50	80	"	"	<40	"	"	
	60	125	10	36	<40	<10	10	
	70	115	25	25	"	"	10	
	80	125	10	30	"	"	"	
	90	145	"	"	"	"	20	
	100	100	"	36	<40	<10	10	
	110	85	"	30	<40	"	20	
	120	110	"	25	"	"	10	
	130	175	2,900	30	"	10	20	
No.20	0	30	25	50	40	10	80	
	10	15	830	10	<40	<10	<10	
	20	"	10	13	40	"	10	
	30	55	"	27	"	"	20	
	40	"	25	32	"	10	25	
	50	25	10	20	"	"	20	
	60	10	170	5	<40	<10	10	
	70	"	10	12	"	"	<10	
	80	"	55	10	"	"	10	
	90	20	10	17	"	"	"	
	100	20	15	30	40	"	"	
	110	30	"	15	"	10	25	
	120	45	10	85	"	10	55	
	130	10	25	155	<40	20	100	
	140	5	40	60	<40	"	40	
	150	10	25	70	40	20	30	
	160	40	"	"	"	10	20	
	170	65	10	83	"	"	25	
	180	15	25	75	<40	"	20	
No.21	0	10	25	35	40	<10	20	
	10	"	"	15	"	"	10	
	20	5	10	25	"	"	"	
	30	10	"	"	"	"	"	
	40	5	25	"	"	"	"	
	50	15	"	30	"	"	"	
	60	"	"	25	"	"	"	
	70	"	10	20	"	"	"	
	80	"	10	"	"	"	"	
	90	125	75	65	"	20	50	
	100	175	40	155	"	30	120	
	110	15	25	25	<40	<10	10	
	120	"	10	"	"	"	"	
	130	5	"	20	"	"	"	
	140	155	95	105	40	35	170	
	150	285	105	280	50	80	410	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.22	0	15	15	46	55	20	60	
	10	10	25	20	40	<10	<10	
	20	15	"	24	"	"	10	
	30	< 5	15	17	"	"	<10	
	40	5	"	20	"	"	10	
	50	15	<10	13	40	"	<10	
	60	"	10	15	40	"	"	
	70	34	15	63	"	20	50	
	80	130	10	230	80	55	230	
	90	30	15	57	40	15	45	
	100	50	"	65	"	10	25	
	110	35	10	61	"	"	20	
No.23	0	45	15	20	40	<10	10	
	10	25	"	15	"	"	<10	
	20	15	25	13	"	"	"	
	30	"	10	12	<40	"	"	
	40	20	10	12	<40	<10	<10	
	50	15	"	15	40	"	"	
	60	25	"	18	"	50	25	
	70	75	"	69	"	15	55	
	80	45	"	26	<40	10	20	
	90	55	"	31	40	"	"	
	100	35	"	23	"	"	10	
	110	240	100	200	130	65	230	
No.24	0	45	15	18	<40	<10	10	
	10	10	"	16	"	20	<10	
	20	30	10	30	"	30	20	
	30	15	"	23	"	"	10	
	40	10	"	17	"	"	<10	
	50	15	15	37	"	"	25	
	60	"	10	18	"	35	10	
	70	20	"	"	"	30	"	
	80	25	"	24	"	35	20	
	100	35	"		55	10	"	
	110	90	"	44	40	15	30	
No.25	0	10	10	18	40	<10	<10	
	10	"	"	"	<40	"	"	
	20	< 5	"	17	"	"	"	
	30	5	"	18	"	"	"	
	40	"	"	"	"	"	20	
	50	< 5	"	16	"	"	<10	
	60	20	"	25	"	"	"	
	70	15	"	18	"	"	"	
	80	"	15	16	"	"	"	
	90	20	10	18	40	"	"	
	100	20	"	15	55	10	"	
	110	35	"	"	"	"	"	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.26	0	45	15	18	<40	15	10	
	10	5	"	"	"	<10	"	
	20	<5	10	"	"	"	<10	
	30	"	"	23	40	10	"	
	40	"	15	16	"	"	"	
	50	15	"	18	"	"	10	
	60	5	"	"	<40	<10	<10	
	70	<5	10	21	40	"	10	
	80	"	"	18	<40	"	"	
	90	5	"	23	"	30	25	
	100	10	"	13	40	15	20	
	110	<5	"	39	"	10	25	
No.27	0	5	10	18	<40	<10	10	
	10	<5	15	"	40	"	<10	
	20	"	"	21	"	"	10	
	30	"	10	"	"	"	"	
	40	"	"	"	"	"	"	
	50	10	"	45	<40	10	15	
	60	7	"	37	"	15	"	
	70	10	"	30	40	20	20	
	80	28	15	45	"	"	35	
	90	37	10	35	"	30	50	
	100	40	"	37	"	30	30	
	110	30	25	205	"	40	360	
No.28	0	15	25	26	<40	10	20	
	10	<5	10	17	40	<10	10	
	20	"	15	21	<40	10	15	
	30	5	10	27	"	<10	10	
	40	"	15	"	"	"	15	
	50	"	"	29	"	"	"	
	60	"	10	33	"	10	"	
	70	5	10	27	<40	10	20	
	80	"	"	29	"	"	"	
No.29	0	7	10	21	<40	<10	15	
	10	<5	"	19	"	"	"	
	20	"	"	29	"	10	"	
	30	"	"	33	"	"	20	
	40	"	15	60	40	"	35	
	50	"	10	48	"	15	20	
	60	5	"	31	<40	20	25	
	70	72	"	82	"	35	140	
	80	12	"	50	40	15	30	
	90	15	15	"	<40	20	50	
	100	55	25	205	"	35	370	
No.30	0	42	15	165	40	20	230	
	10	7	10	25	<40	<10	20	
	20	5	10	37	40	"	25	
	30	7	15	30	"	"	"	
	40	<5	"	25	<40	"	20	
	50	50	10	51	40	35	60	
	60	60	15	92	"	75	110	
	70	115	45	200	<40	70	260	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.31	0	20	55	25	40	20	40	
	10	5	10	26	"	<10	20	
	20	20	25	10	<40	"	10	
	30	<5	10	5	<40	<10	"	
	40	"	15	20	40	<10	"	
	50	22	"	33	"	10	25	
	60	80	130	58	"	20	60	
	70	15	25	20	40	<10	20	
	80	62	"	270	60	35	480	
	90	37	"	170	"	55	510	
	100	85	40	70	80	30	230	
	110	5	25	35	40	10	50	
No.32	0	10	40	20	40	20	30	
	10	<5	"	10	<40	10	10	
	20	"	25	"	"	<10	"	
	30	5	25	20	40	"	"	
	40	55	55	85	"	50	100	
	50	30	80	60	"	30	10	
	60	10	10	"	40	20	70	
	70	65	55	290	40	35	260	
	80	5	25	20	"	10	40	
	90	45	25	70	50	35	250	
	100	"	40	80	40	45	260	
	110	30	15	50	<40	15	50	
No.33	0	15	10	19	<40	<10	15	
	10	5	"	13	"	"	<10	
	20	"	"	16	"	10	"	
	30	15	20	36	"	25	35	
	40	"	10	49	"	50	50	
	50	"	20	30	"	30	30	
	60	50	10	62	"	15	95	
	70	75	20	95	"	30	200	
	80	15	"	33	"	<10	35	
	90	5	10	28	"	"	15	
	100	"	20	87	"	25	145	
	110	15	"	33	"	15	40	
No.34	0	<5	10	28	<40	10	40	
	10	20	<10	15	"	"	<10	
	20	15	20	126	"	15	135	
	30	90	"	"	"	10	165	
	40	20	100	99	"	15	220	
	50	115	30	47	"	10	90	
	60	110	85	132	"	40	280	
	70	10	15	45	40	10	50	
	80	70	55	132	80	40	335	
	90	80	20	141	40	30	280	
	100	40	10	55	"	15	50	
	110	20	<10	53	<40	"	"	

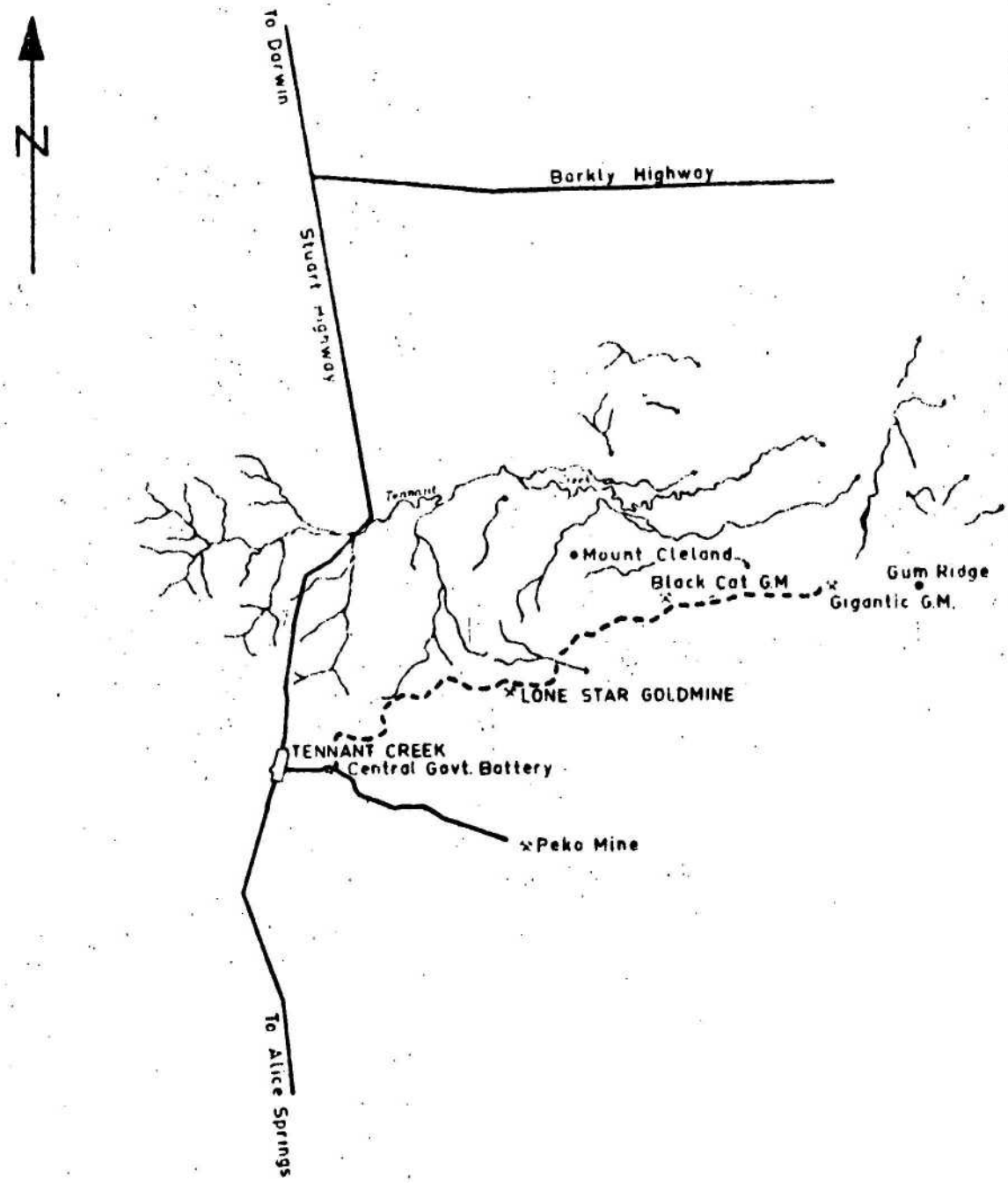
	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.35	0	5	<10	70	<40	55	65	
	10	70	"	80	"	10	90	
	20	65	10	153	"	25	255	
	30	120	"	66	"	10	105	
	40	95	20	70	<40	40	280	
	50	80	20	51	"	40	410	
	60	20	"	69	<40	25	135	
	70	135	"	57	"	<10	80	
	80	90	20	153	"	30	315	
	90	15	"	165	40	40	400	
	100	20	15	78	60	20	80	
	110	10	10	66	<40	10	90	
No.36	0	10	10	16	<40	<10	30	
	10	"	<10	11	"	"	10	
	20	5	"	8	"	"	<10	
	30	30	10	82	"	40	80	
	40	15	<10	132	"	10	190	
	50	135	20	120	"	25	220	
No.37	0	<5	10	38	<40	<10	15	
	10	"	"	34	40	10	20	
	20	95	80	130	"	25	85	
	30	15	<10	40	<40	<10	30	
	40	20	"	68	"	10	75	
	50	55	20	153	"	25	325	
	60	5	10	49	"	10	75	
	70	150	30	100	40	30	280	
	80	200	"	135	"	40	300	
	90	"	"	132	"	"	315	
No.38	0	10	<10	23	<40	<10	30	
	10	5	"	21	"	<10	10	
	20	30	10	55	"	15	40	
	30	10	<10	30	"	<10	15	
	40	5	10	33	"	"	"	
	50	90	30	132	"	15	230	
	60	50	20	100	<40	15	265	
	70	20	10	43	"	<10	95	
	80	25	110	80	40	25	265	
	90	107	30	140	"	40	440	
	100	20	10	38	<40	<10	90	
	110	"	"	82	"	15	190	
No.39	0	5	<10	19	<40	<10	15	
	10	10	10	13	"	"	<10	
	20	"	"	59	"	25	65	
	30	160	"	147	"	15	150	
	40	5	20	45	"	<10	75	
	50	75	45	141	"	15	245	
	60	15	10	57	"	<10	95	
	70	28	25	95	40	30	270	
	80	10	10	40	<40	<10	90	
	90	60	50	78	40	40	300	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.40	0	10	<10	19	<40	<10	15	
	10	<5	15	23	"	"	20	
	20	5	<10	19	"	"	10	
	30	"	<10	21	"	"	"	
	40	10	"	27	"	"	<10	
	50	"	"	21	"	10	10	
	60	20	"	27	"	<10	30	
	70	30	"	62	"	"	115	
	80	10	10	27	"	"	40	
	90	75	20	68	"	30	165	
	100	25	10	60	"	25	150	
	110	"	"	"	"	<10	160	
No.41	0	5	10	30	40	<10	10	
	10	"	"	34	"	"	15	
	20	"	<10	20	<40	"	10	
	30	<5	10	41	40	"	20	
	40	<5	"	43	"	10	25	
	50	5	"	20	<40	"	15	
	60	5	10	38	40	20	35	
	70	72	60	125	"	25	160	
	80	35	30	175	"	"	240	
	90	70	45	84	<40	15	165	
	100	25	25	120	40	20	130	
	110	22	"	83	"	"	115	
No.42	0	45	30	40	<40	<10	40	
	10	40	10	49	"	25	50	
	20	125	20	55	"	205	115	
	30	330	30	308	"	"	650	
	40	50	10	100	"	25	135	
	50	40	15	87	40	15	120	
	60	115	20	171	<40	30	315	
	70	15	"	84	"	10	90	
	80	80	"	100	40	30	330	
	90	22	15	83	40	20	80	
	100	5	"	48	"	10	35	
	110	7	"	60	"	"	40	
No.43	0	50	20	53	40	10	50	
	10	60	"	62	"	"	75	
	20	20	10	17	<40	<10	10	
	30	15	"	"	"	"	10	
	40	10	20	21	"	"	10	
	50	15	10	132	"	40	330	
	60	20	"	40	"	<10	90	
	70	45	20	64	"	15	165	
	80	40	45	132	40	40	440	
	90	10	10	43	<40	10	50	
	100	"	"	38	"	<10	15	
	110	5	"	33	<40	"	"	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.44	0	28	25	26	60	10	40	
	10	105	55	49	<40	<10	15	
	20	15	20	16	"	"	10	
	30	37	15	87	<40	10	130	
	40	70	25	215	40	25	420	
	50	7	10	92	<40	10	110	
	60	<5	11	77	<40	<10	90	
	70	<5	<10	74	40	"	50	
	80	<5	10	53	<40	"	40	
	90	5	"	85	40	10	"	
	100	"	"	74	"	"	35	
	110	<5	"	53	"	"	"	
No.45	0	20	20	141	<40	<10	355	
	10	15	10	165	"	10	335	
No.46	0	45	20	36	<40	10	95	
	10	50	"	33	"	25	15	
	20	140	"	165	"	40	325	
	30	225	"	310	"	15	30	
	40	70	"	165	"	<10	210	
	50	85	"	186	"	"	245	
	60	20	10	30	"	"	30	
	70	15	"	28	"	"	15	
	80	"	"	66	"	"	50	
	90	5	"	49	"	"	"	
	100	"	"	62	"	"	30	
	110	"	"	70	"	"	35	
No.47	0	60	15	280	40	140	610	
	10	40	45	83	"	15	80	
	20	137	"	185	"	70	370	
	30	10	25	50	<40	10	110	
	40	15	"	80	"	"	190	
	50	"	40	240	40	30	520	
No.48	0	10	40	30	<40	10	70	
	10	"	10	15	40	<10	30	
	20	15	25	20	<40	"	20	
	30	30	40	35	40	"	50	
	40	65	55	85	"	20	160	
	50	40	40	55	<40	10	90	
	60	170	"	150	40	20	310	
	70	25	25	55	<40	10	110	
	80	30	40	90	50	30	240	
	90	5	"	60	40	10	60	
	100	"	25	35	"	"	40	
	110	"	40	50	"	20	50	

	Feet	Cu	Pb	Zn	Bi	Co	Ni	Au
No.49	0	5	40	20	40	<10	20	
	10	10	15	30	"	"	25	
	20	<5	10	20	"	"	15	
	30	25	40	55	"	10	60	
	40	"	30	63	"	20	90	
	50	72	"	225	"	35	430	
	60	5	25	45	"	20	80	
	70	7	"	48	60	10	45	
	80	135	40	95	50	35	60	
	90	15	25	40	40	10	40	
	100	5	"	58	"	"	20	
	110	"	"	60	"	"	"	
No.51	0	10	10	75	<40	10	200	
	10	5	"	10	"	70	20	
	20	65	25	80	"	"	170	
	30	170	40	265	40	10	980	
	40	35	25	95	"	20	190	
	70	55	10	55	"	10	110	
	80	65	"	10	50	"	70	
	90	80	"	80	40	"	90	
	100	90	"	105	"	"	110	
No.52	0	20	25	25	40	10	30	
	20	280	55	70	"	20	80	
	40	500	"	500	50	50	1400	
	70	305	40	325	50	45	650	
	80	65	10	65	40	10	90	
	90	50	40	210	"	30	"	
	100	15	25	195	"	35	60	
	110	"	10	85	"	20	50	

PLATE 1



LOCALITY MAP

LONE STAR GOLDMINE

TENNANT CREEK

5 0 5 Miles

SCALE 1 : 250,000

To accompany Record 1970/51

E53/A14/203

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN AUGUST 1969

G69/95E

LEGEND

- Slate
- Fine, Medium & Coarse Sandstone
  - F Fine grained
  - M Medium grained
  - C Coarse grained
- Geological boundary, approximate
- Strike & dip of bedding
- Strike & dip of cleavage
- Strike of vertical cleavage
- Fault, with dip
- Collar of diamond drill holes
- Position of percussion drill holes
- Shaft
- 140' Level, 160' Level, 200' Level — Underground workings
- Boundary of open cut
- Road

LONE STAR AREA
SURFACE GEOLOGY, UNDERGROUND WORKINGS & DRILL HOLE LOCATIONS

40 0 40 80 Feet
SCALE 1" = 40'

(After J. Ivanac 1954)

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN AUGUST 1969

To accompany Record 1971/50

E53/A14/204
G69/96B

SUMMARY OF INVESTIGATIONS CARRIED OUT AT THE GIGANTIC GOLDMINE, TENNANT CREEK, N.T.

by

B.A. Tapp

Record 1971/50

CONTENTS

SUMMARY

The Gigantic goldmine is situated about 19 miles east-northeast of Tennant Creek.

The mine workings are located on the western arm of a 'T' shaped hill.

Gold occurs both in quartz hematite lodes and in adjacent brecciated zones. These lodes have been formed in the drag folded limbs of a major southeasterly pitching anticline.

The sedimentary succession consists of a lower shale member, conformably overlain by a middle sandstone unit, and an upper interbedded series of sandstones and shales. This succession is part of the Warramunga Group sediments of Lower Proterozoic age.

Four diamond drill holes were sited on two magnetic anomalies. All four holes intersected ironstone, but none contained mineralization.

Eleven wagon drill holes were completed as part of a programme to outline the lateral extension of the outcropping ironstone intersected in the diamond drill holes.

A further programme of drilling is recommended.

INTRODUCTION

The Gigantic goldmine is situated about 19 miles from Tennant Creek. The mine workings are located on the western arm of a 'T' shaped hill.

Access to the mine is by the 'Pigeon Holes' track via the Lone Star and Black Cat goldmines.

In 1957, United Uranium N.L. took an option on the leases, and after a ground magnetic survey, drilled an anomaly centred at 300N/1600W. The results are tabulated in Appendix E.

During 1959 Australian Development N.L. drilled several holes underground, testing for possible down pitch extensions of the mineralized lode. Two holes were drilled into the massive quartz-hematite, but no mineralized lode was intersected. The results are tabulated in Appendix F.

GEOLOGY

Outcrop is poor except around the old mine workings on the western arm of the 'Gigantic' hill. This hill is the most prominent feature in the area and is composed of massive quartz-hematite lodes with sandstones, siltstones, and brecciated iron impregnated sediments.

The sedimentary succession consists of a lower shale series (400'+ thick), overlain by a middle sandstone series (300'? thick), which in turn is overlain by a series of interbedded sandstones, shales and siltstones.

The lower shale series consists of interbedded red-brown ferruginous shales, and sandy shales. Adjacent to the ironstone contacts, the shales are highly brecciated and cleaved.

The overlying sandstones are fine-grained, consisting of quartzitic sandstone, tuffaceous sandstone and ferruginous sandstone. These sediments are slightly brecciated and cleaved adjacent to the ironstones.

The top member of the sequence consists of interbedded shales and sandstones. The series is intruded by a lamprophyre sill. The lamprophyre is a dark-green, coarse-grained, friable, granitic textured rock. Black biotite is the predominant mineral with accessory magnetite, augite and hornblende(?). Slight silicification and induration is evident in the sediment contact zones. The lamprophyre intrusion post-dates the ironstone deposits.

Numerous concordant quartz-hematite bodies outcrop on the lease. The hematite is hard, massive, compact, with varying amounts of associated quartz. The quartz content of the ironstones, from west to east across the lease, varies from about 5% to 35%.

The ironstones occur as replacement lodes and are more commonly restricted to the shale and mudstone horizons. Two lodes were mapped within the sandstones. An increase in quartz content, with a proportionate decrease in gold values, is distinctive of the ironstones.

The outcropping ironstones were chip sampled, but only low gold values were found. No evidence of copper mineralization was found on the surface, and previous geochemical samples for copper by MacMillan and Debnam in 1959 failed to reveal the presence of any significantly anomalous mineralized lodes.

PRODUCTION

Production as recorded by the Mines Branch, Northern Territory Administration, is as follows:-

(Ivanac Bull.22, pp.120)

Year	Long Tons	Gold Yield by Amalgamation Dwts/Ton	Gold Yield in Tailings Dwts/Ton
1937-38	73.75	19.9	6.4
1938-39	-	-	-
1939-40	79.55	17.6	8.8
1940-41	39.40	6.7	4.1
1941-42	20.05	7.7	2.0
1942-48	-	-	-
1948-49	161.40	7.3	3.7
1949-50	374.9	7.8	5.9
1950	375.3	7.7	5.3
	1,124.35	Av. 9.1	Av. 6.3

GROUND MAGNETIC SURVEYS

During 1957, a ground magnetometer survey of the Gigantic leases was carried out by personnel of United Uranium No Liability (see Plate 3). The results of the survey are as follows:-

Five major magnetic centres were discovered. Interpretations of the sizes, shapes and depths of the magnetic bodies are given below.

Anomaly No.1

This is a moderately deep seated (350' to 400') lenticular body of relatively small size; strike length about 100', centred at 1090N/2420W.

Anomaly No.2

This anomaly shows a positive 3600 gamma 'high' above the general base level, and is the largest value single anomaly.

The anomaly is interpreted as being due to a large tabular body; strike length about 400'. The body dips south at about 70° and is continuous to a depth of 700'+. The body pitches steeply to the southeast. The anomaly is centred at 320N/1600W.

Anomaly No.3

This anomaly is due to a small spherical body at a depth of about 300', centred at 00/1100W.

Anomaly No.4

This is a large negative anomaly centred over the mine workings. The reversal of polarity may be due to the effect of weathering above the water table. This suggests that the magnetic body is situated entirely within the oxidised zone.

Anomaly No.5

This is a lenticular body with a strike length of about 200', located at a depth of 350'. The body, centred at 250S/200E, dips vertically and pitches toward the southeast.

The anomaly represents a possible down pitch extension of the previously worked ore-shoot.

DRILLING RESULTS

The diamond drill sites were plotted by J. Shields.

D.D.H. Nos 1 and 2 were sited to test anomaly No.5, and D.D.H. Nos 3 and 4 to test the lateral extension of the ironstone lode intersected by the drill hole put down by United Uranium N.L. on Anomaly No.2

The complete drill logs are tabulated in appendices A,B,C and D.

D.D.H. Nos 1 and 2

The hematite/magnetite lode intersected is considered to be the down pitch extension of the originally worked ore-body. The lode contacts are gradational. Numerous mudstone inclusions within the hematite/magnetite/chlorite lode indicates that the ironstone occurs as a replacement deposit within the shale/mudstone sequence.

D.D.H. Nos 3 and 4

A massive, concordant, hematite/magnetite lode was intersected in both drill holes. The ironstone contains abundant chlorite, forming cryptocrystalline vug and cavity infillings. The lode contacts are gradational.

The lamprophyre intrusion intersected in D.D.H.3 does not appear to have been a controlling factor in the mineralization of the ironstones.

No gold or copper values were detected in the four drill hole lode intersections.

During October 1967, eleven wagon drill holes were completed on the Reserve. The programme was terminated pending the availability of suitable rods for greater penetration.

The holes were sited to locate the lateral extension of the ironstones outcropping near magnetic anomalies Nos 2 and 3.

Ironstone was intersected in five holes. Geochemical analysis indicated anomalous copper concentrations within the ironstones, but no gold was revealed.

CONCLUSIONS

The ironstones on the Gigantic Reserve occur as replacement deposits generally within the shale and siltstone members of the succession. The lodes are conformable with bedding. The gradational contacts and intermittant occurrences of contact brecciation zones indicate that the ironstones were formed during or after the folding.

RECOMMENDATIONS

A further programme of wagon drilling is proposed, to further test the outcropping ironstones. Analysis results from wagon drill cuttings should provide an indication of the value of further 'follow up' work.

REFERENCES

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HAINES, R., 1957 - Variometer Survey of the Gigantic Leases, Tennant Creek, N.T., - United Uranium N.L. (Unpubl.).

APPENDIX A.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE — REMARKS: 1" = 20'

HOLE No: D.D.H. No. 1 — CO-ORDINATES: 220 E / 235 S — R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. — ANGLE FROM HORIZONTAL: -44° — DIRECTION: 322° M

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
4" Red Brown siltstone. Interbedded medium and fine grained blocky sandstones. Secondary quartz veining abundant (1-2 mms). Hematite blebs and stringers associated with the quartz veins. % ironstone in hole increasing down hole.		BX CORE BARREL USED.		2.4% 0.6' 7.7% 1.8' 20% 2.5' 47.3% 6.6' 46.3% 8.6' 78% 15.6'		100' Corrected dip reading 46°	
Fg. ferruginous sandstone, grading into massive quartz ironstone (last 7").				41.5% 8.3'	61.1 61.2 61.3		
Vuggy, massive, quartz specularite.			IRONSTONE LODE	56% 8.4'	61.4 61.5		ALL SAMPLES RETURNED NIL VALUES OF GOLD AND COPPER
Red brown siltstone (8"). Quartz Hematite.				15.3% 2.3'	61.6 61.7 61.8	150' Corrected dip reading 44½°	
Vuggy quartz specularite. abundant siltstone inclusions (1-3 mms)				25.7% 3.6' 8.9'	61.9 61.10 61.11 61.12		
Large (8") siltstone inclusions in ironstone.				51% 19.2%	61.13 61.14 61.15		
Banded siltstones. Banding 60° to core axis. Hematite quartz veins.				2.4'	61.16 61.17		

Depth scale: 20', 40', 60', 80', 100', 120', 140', 160', 180', 200'

DRILL NO. EDICO TYPE MA I	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE LOGGED BY B.A. TAPP DRAWN BY B.A. TAPP CHECKED BY
DRILLER COMMENCED COMPLETED	REFERENCES ..... SANDSTONE —·— SILTSTONE ▬ QUARTZ HEMATITE.	SHEET 1 OF 2 DRAWING NO.

GD130

E53/A14/212 G69/68E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No: D.D.H. No 2 CO-ORDINATES: 220 E / 235 S R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: -44° DIRECTION: 323°M

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Grey siliceous siltstone, with quartz veinlets (1-3mm), and more rarely hematite.				80% 12.9'	G1-18 G1-19		ALL SAMPLES RETURNED NIL VALUES of GOLD AND COPPER.
220'				72.5% 17.4'			
240' Massive 4" quartz vein at 244'				7' 87.5%			
250'			QUARTZ			250' Corrected dip reading 47°.	
END OF HOLE.		BX CORE BARREL USED.					

DRILL NO: EDICO TYPE: NA I	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE LOGGED BY: B.A. TAPP DRAWN BY: B.A. TAPP CHECKED BY:
DRILLER: COMMENCED: COMPLETED:	REFERENCES -.- SILTSTONE — QUARTZ HEMATITE	SHEET 2 OF 2 DRAWING NO:

GD130

E53/A14/212 G69/69E

APPENDIX B.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING ... GIGANTIC GOLDMINE ... REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 2 ... CO-ORDINATES: 375 E / 430 S ... R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ... ANGLE FROM HORIZONTAL: -49° ... DIRECTION: 323° M

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
Coarse grained, well weathered buff and red, current bedded sandstones. In part kaolinised - evidence of minor shears. (20', 40', 60')		BX CORE BARREL USED.		4.34 98; 1.3'; 2.0'; 20%; 2.2'; 22.5%; 1.5'; 16.7%; 1.9'; 19%; 1.25; 125			
80' 6" Red siltstone. Red and purple coarse grained current bedded sandstone. Occasional hematite blebs and stringers (1-3 mms).				2.6'; 21.6%; 2.9'; 29%		The ironstone lode is a replacement deposit. The amount of hematite within the sediments increases down hole. Contact of lode/sediment very gradational. Siltstone inclusions within main ironstone lode.	
100' Red siltstone. 8" Sandstone.				5.9'; 73.8			
Coarse grained red purple current bedded sandstones. 6" Muddy siltstone.				4.9; 98; 5.25; 88			
120' Siltstone. Sandstone.				6.25; 66			
F.g. red and purple siltstones. Abundant ironstone stringers and blebs.				7.0'; 78; 6.3'; 90	G2.1; G2.2; G2.3		ALL SAMPLES RETURNED NIL VALUES OF GOLD AND COPPER.
140' Predominantly red and purple siltstones with occasional beds of coarse grained sandstone. Hematite very abundant as stringers, veinlets, blebs and vug infillings.				6.3'; 90; 7.4'; 92	G2.4; G2.5; G2.6		
160'				10.3; 94; 8.3'; 83	G2.7; G2.8; G2.9; G2.10		
180' As above until at 182', massive specularite lode. little quartz associated. Very chloritic - occurs as vug infillings.			IRONSTONE LODE	9.6; 96; 10.0; 100	G2.11; G2.12; G2.13; G2.14; G2.15		
200'							

DRILL NO. EDICO TYPE Mk. V	EXPLANATION CASING IN HOLE DURING DRILLING		HEAD OFFICE LOGGED BY B.A. TAPP DRAWN BY B.A. TAPP CHECKED BY
DRILLER COMMENCED COMPLETED	REFERENCES ..... SANDSTONE —·— SILTSTONE. ▬ HEMATITE		SHEET 2 OF 3 DRAWING NO.

GD130

E53/A14/213 G69/70E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING ... GIGANTIC GOLDMINE ... REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 2 ... CO-ORDINATES: 575 E / 430 S ... R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ... ANGLE FROM HORIZONTAL: -49° ... DIRECTION: 323° M

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Massive quartz chlorite hematite rock. Very little magnetite. Occasional siltstone inclusions. (220' – 280')	IRONSTONE LODE.	BX CORE BARREL USED.		93.8% / 81.67'	G2·16 – G2·32		ALL SAMPLES RETURNED NIL VALUES of GOLD AND COPPER.
				8' 100	G2·33		
				9' 100	G2·34 – G2·35		
				9' 100	G2·36 – G2·37		
From 310' the ironstone lode grades into grey/black siltstones. Bedding/core axis angle is 45° (320')				20' 100%	G2·38 – G2·41		
Grey siltstones and shales. Occasional quartz veinlets. Small chalcopyrite vein at 340' (1-2 mms). Less ironstone than above. (340')				20' 100%	G2·42 – G2·45		
Grey black siltstones and shales, with occasional thin beds of sandstone. Quartz veins abundant. Chlorite along cleavages. Minor slump structures. Bedding/core axis angle is 45°. (360' – 400')				127.5' 92.2%	G2·46 – G2·65		

DRILL NO.: EDICO TYPE: MK. II	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE LOGGED BY: B.A. TAPP DRAWN BY: B.A. TAPP CHECKED BY:
DRILLER: COMMENCED: COMPLETED:	REFERENCES — — SHALE -·- SILTSTONE ···· SANDSTONE. ● HEMATITE	SHEET 2 OF 3 DRAWING NO.

GD130

E53/A14/213 G69/71E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No: D.D.H. No. 2 CO-ORDINATES: 375 E / 430 S. R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: -49° DIRECTION: 323°M

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Highly cleaved black albitic siltstones and shales with occasional thin intercalated sandstone beds. Quartz veins abundant. Between 420' - 439' development of pyrite along clearages.		BX CORE BARREL USED.		92.2% 127.5'	G2.56 G2.57 G2.58 G2.59 G2.60 G2.61 G2.62 G2.63	460' Corrected dip reading 48½°.	ALL SAMPLES RETURNED NIL VALUES of GOLD AND COPPER.
END OF HOLE.							

420' 440' 460' 480' 488'

DRILL NO: EDICO
TYPE: Mk. V

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES: SILTSTONE; SHALE; SANDSTONE.

DRILLER:
COMMENCED:
COMPLETED:

HEAD OFFICE
LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:
SHEET 3 OF 3
DRAWING NO:

GD130

E53/A14/213 G69/72E

APPENDIX C.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 3 CO-ORDINATES: 125 S / 1490 W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: -50° DIRECTION: 026°M.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Medium/coarse grained gritty tuff sandstone. Well weathered. In part quartzitic and re-silicified. (20', 40')		BX CORE BARREL USED.		19.0% 7.5'			
Coarse grained, well weathered, gritty tuff sandstones, and sub-greywackes. Hematite blebs and stringers with limonite developed along cleavages. (60')				73.0% 26.26'		No contact metamorphic effects.	
Friable, micaceous, dark green and black weathered lamprophyre. Predominance of biotite, with augite, magnetite and hornblende. (80', 100', 120', 140')				75.5% 51.25'			
Grey, red, and black siltstones, with minor biotite lamprophyre bands (160')				64.1%	2.7', 0.3', 3.75', 1.3', 2.5', 3.4', 0.8', 2.4', 2.4', 6.1', 5.4', 2.25', 3.35'		
Medium grained sandstones and grey sandy siltstones. (180')							
Grey-red siltstone, with numerous quartz veinlets (1.2m) (200')							

DRILL NO. EDICO TYPE MK. V.	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE LOGGED BY B.A. TAPP DRAWN BY B.A. TAPP CHECKED BY
DRILLER F. FULTON COMMENCED COMPLETED	REFERENCES .... SANDSTONE -.- SILTSTONE. \/\/ LAMPROPHYRE.	SHEET 1 OF 3 DRAWING NO

GD130

E53/A14/214 G69/73E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 3 CO-ORDINATES: 125 S / 1490 W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: - 50° DIRECTION: 026° M.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Greyish red siltstones. Becoming increasingly chloritic down hole.				5·5 84% 5·4 74% 8·23' 68·7%			
220'							
3' Green Black Chloritic shales. Sheared & silicified talcose shales.			SHEARED BRECCIATED ZONE ADJACENT TO IRONSTONE LODE.	6·0' 63·1%	G3·1	Major Shear Zone.	
Sheared silicified quartz chlorite rock. Small hematite inclusions.				3·5' 70%	G3·2		
240' Quartz chlorite hematite shear breccia.				16·5' 97·4%	G3·3 G3·4 G3·5 G3·6	260' Corrected dip reading 48°.	
1' As above. Sheared green black chloritic shales.				4·1' 91%	G3·7		
260' 3' Sheared chloritic shales, grades into quartz-hematite-chlorite breccia.				8·67' 86·7%	G3·8 G3·9		
1'6" Sheared chloritic shales. Quartz-hematite chlorite lode.				10·0 100%	G3·10 G3·11		
280' Quartz-hematite magnetite-chlorite lode.		3x CORE BARREL USED.	IRONSTONE LODE.	100%	G3·12 G3·13 G3·14 G3·15 G3·16 G3·17 G3·18 G3·19 G3·20 G3·21 G3·22 G3·23 G3·24 G3·25 G3·26 G3·27 G3·28 G3·29 G3·30		ALL SAMPLES RETURNED NIL VALUES FOR GOLD AND COPPER.
300' Large (6") red brown shale inclusions at 377' and 383'6".							
320'							
340'							
360'				95·5'			
380'				18·0' 100%	G3·31 G3·32 G3·33 G3·34 G3·35		
Green black highly sheared chloritic shales.							
400'							

DRILL NO. EDICO	EXPLANATION		HEAD OFFICE
TYPE MK. I.	CASING IN HOLE DURING DRILLING		LOGGED BY B.A. TAPP
			DRAWN BY B.A. TAPP
DRILLER F. FULTON	REFERENCES		CHECKED BY
COMMENCED	-- -- SHALE		SHEET 2 OF 3
COMPLETED	-- -- SILTSTONE.		DRAWING NO.

GD130

E53/A14/214 G69/74E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 3 CO-ORDINATES: 125 S / 1490 W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: -50° DIRECTION: 026° M.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Green black highly cleaved chloritic shales. Abundant quartz veining at 412'. Cleavage / core axis angle is 60°. Bedding indistinct, about 20° to core axis.		BX CORE BARREL USED.		22.75' 96.9%	G3-36 G3-37		ALL SAMPLES RETURNED NIL VALUES FOR GOLD AND COPPER
420'							
440'				97.6%			
460'							
480'				77.25'			
500'						500' Corrected dip reading 48°	
520'				88.7%			
540'							
560'				63.25'			
567'							
END OF HOLE.							

DRILL NO.: EDICO
TYPE: Mk. I
DRILLER: F. FULTON
COMMENCED:
COMPLETED:

EXPLANATION

CASING IN HOLE DURING DRILLING

REFERENCES

-- SHALES.

HEAD OFFICE

LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:
SHEET 3 OF 3
DRAWING NO.:

GD130

E53/A14/214 G69/75E

APPENDIX D.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLD MINE REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 4 CO-ORDINATES: 245 N/1240 N R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: -56° DIRECTION: 045° M

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Dark green grey weathered lamprophyre. Predominance of biotite and mafic minerals - magnetite, augite, and hornblende? Very friable and micaceous. The micas occur as small interlocking 'books' (1-2 mm) with mafics in the interstices. (20' 40' 60' 80')		BX CORE BARREL USED.		77.67% 77.67'			
11'6" Lamprophyre as above. Fine grained purple shales. At 123', a 6" band of m. g. buff sandstones. Shale/sandstone contact 10° to core axis. (100' 120')				97.5% 29.25'		No contact metamorphism discernable.	
Interbedded purple shales and buff medium grained sandstones. Sandstones are very micaceous. (140')				96.5% 20.25'			
Micaceous sandstone. 155'-174' Grey-red fine grained siltstone. At 160', 1' micaceous sandstone. (160')				98% 22.5'			
Red grey siltstone. Occasional thin interbeds of reddish brown shale and medium grained micaceous sandstone. (180' 200')				67.2% 20.5'	G4.1 G4.2	200' Corrected dip reading 53°	SAMPLES ASSAYED NIL GOLD & COPPER.

DRILL NO.: EDICO
TYPE: MARK V

DRILLER: F. FULTON
COMMENCED:
COMPLETED:

EXPLANATION
CASING IN HOLE DURING DRILLING

REFERENCES
— — SHALE
—·— SILTSTONE
····· SANDSTONE
LAMPROPHYRE.

HEAD OFFICE
LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:
SHEET 1 OF 7
DRAWING NO.:

G0130

E53/A14/215 G69/76E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE — REMARKS: 1" = 20'

HOLE No.: D.D.H. No. 4 — CO-ORDINATES: 245 N / 1840 W — R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. — ANGLE FROM HORIZONTAL: -56° — DIRECTION: 049° M.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Interbedded siltstones and shales. Shales are black, slatey and chloritic		BX CORE BARREL		10·25' 85·7%	G4·3, G4·4, G4·5		ALL SAMPLES RETURNED NIL VALUES FOR GOLD AND COPPER.
220' Black chloritic shales. Cleavage at 45° to core axis.				3·7 6·8%	G4·6	From 222' shales impregnated with hematite.	
Quartz hematite rock. Quartz and specularite occur interlocked and intertwined, giving a "turbidite" flow structure. Chlorite occurs abundantly as ring, cavity and interstitial fillings. Some magnetite in the lode.			IRONSTONE LODE.	5·25 70·0%	G4·7, G4·8		
240'		240'		9·33 93·3%	G4·9, G4·10		
260'		AX CORE BARREL USED.		55·0' 100%	G4·11, G4·12, G4·13, G4·14, G4·15, G4·16, G4·17		
280'					G4·18, G4·19, G4·20, G4·21		
		295'		10·67 82·3%	G4·22, G4·23		
300'							
Black chloritic hematitic slates. Cleavage/core axis = 45°			H — H	6·67 74·0%	G4·24, G4·25		
320' 317'-332' Milky white quartz vein. Small chloritic slate inclusions. Black chloritic slates with minor quartz veining			QUARTZ VEIN	12·25' 72·0%	G4·26, G4·27, G4·28, G4·29	Small magnetite/hematite shale assoc. with quartz veining	
340' Chloritic siltstones and shales with occasional thin quartz veins (1/4"). Often small quartz infillings along cleavages and fractures. Bedding/core axis angle is 45°-55°.		AXT CORE BARREL USED.		96·8'	G4·30		
360'							
380'				73·75'			
400'							

DRILL NO. EDICO TYPE MK. II	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE LOGGED BY B.A. TAPP DRAWN BY B.A. TAPP CHECKED BY
DRILLER F. FULTON COMMENCED COMPLETED	REFERENCES — — SHALE -·- SILTSTONE H HEMATITE	SHEET 2 OF 3 DRAWING NO.

GD130

E53/A14/215 G69/77E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: DIAMOND DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No: D.D.H. No 4 CO-ORDINATES: 245 N / 1840 W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: -56 DIRECTION: 049° M

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
410'		AXT				410' Connected dip reading 53°	
END of HOLE.							

DRILL NO. EDICO TYPE MK. V	EXPLANATION CASING IN HOLE DURING DRILLING		HEAD OFFICE
DRILLER F. FULTON COMMENCED COMPLETED	REFERENCES — — SHALE -·- SILTSTONE.		LOGGED BY B.A. TAPP DRAWN BY B.A. TAPP CHECKED BY SHEET 3 OF 3 DRAWING NO

GD130

E53/A14/215 G69/78E

APPENDIX B

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON-DRILLING. GIGANTIC GOLDMINE. REMARKS: 1" = 20'
HOLE No: 1 CO-ORDINATES: 245 N / 1055 W R.L. GROUND:
LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: —

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
Yellow-Brown medium grained sandstones. Micaceous in part. Minor hematite between 20'-40' (20', 40')	H	2½" DIAMETER JACKHAMMER BIT			5-01	35	20	30			NIL
					5-02	180	20	90			NIL
					5-03	55	25	150	60		NIL
					5-04	15	25	150			NIL
					5-05	5	10	60			NIL
Brown shales. Chloritic in part. (60', 80')					5-06	5	10	50			NIL
					5-07	295	20	85			NIL
					5-08	355	20	85	80		NIL
Micaceous Quartz-Hematite. Minor amount of chloritic shale. (100', 120', 140', 160')					5-09	600	20	75	60		NIL
					5-10	295	20	75	60		NIL
					5-11	155	20	35			NIL
					5-12	225	10	60			NIL
					5-13	295	10	85			NIL
					5-14	130	25	65	80		NIL
					5-15	660	25	100	80		NIL
					5-16	75	25	100			NIL
END OF HOLE											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO. ROC 600
TYPE ATLAS COPCO
DRILLER F. MILLER
COMMENCED 23:10:67
COMPLETED 23:10:67

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES: IVANAC J.F. B.M.R. BULL. 22. PI.

HEAD OFFICE
LOGGED BY B.A. TAPP
DRAWN BY B.A. TAPP
CHECKED BY
SHEET 1 OF 11
DRAWING NO.

GD130

E53/A14/216 G69/79E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON DRILLING GIGANTIC GOLDMINE REMARKS: 1" E 20'

HOLE No: 2 CO-ORDINATES: 190 N / 1465 W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: -

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
Yellow Med. Gr. Sandstone.		JACKHAMMER BUT 2½" DIAMETER.			6-01	30	25	35			NIL
Brown Shales.					6-02	20	20	30			NIL
20' Chloritic in part.					6-03	5	20	30			NIL
Minor Quartz-					6-04	5	20	25			NIL
40' Hematite 40'-50'.	H				6-05	5	10	35			NIL
Quartz-Hematite.					6-06	55	10	50			NIL
60' The hematite is					6-07	300	10	50			NIL
micaceous in part.					6-08	375	10	50			NIL
80'					6-09	325	10	65			NIL
Chloritic Shales.					6-10	50	10	150			NIL
100' Minor Quartz-					6-11	25	20	95			NIL
110' Hematite.											
END OF HOLE.											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO: ROC 600
TYPE: ATLAS COPCO

EXPLANATION: CASING IN HOLE DURING DRILLING

HEAD OFFICE
LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:

DRILLER: F. MILLER
COMMENCED: 24.10.67
COMPLETED: 24.10.67

REFERENCES: IVANAC. J.F. BULL. 22. Pl.

SHEET 2 OF 11
DRAWING NO:

GD130

E53/A14/216 G69/80E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON-DRILLING GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No: 3 CO-ORDINATES: 140N / 1380 W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: -

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
Yellow medium-grained sandstones.					7-01	10	10	20			NIL
					7-02	10	30	25			NIL
20'					7-03	185	90	60			NIL
					7-04	140	30	60			NIL
40'					7-05	265	25	65			NIL
Chloritic shales.					7-06	30	10	150			NIL
60'					7-07	5	20	150	80		NIL
Minor quartz-hematite 60'-70', and 90'-110'.					7-08	5	25	150	60		NIL
80'					7-09	5	25	100	40		NIL
					7-10	5	25	150	80		NIL
100'					7-11	35	20	150	60		NIL
Quartz-hematite.					7-12	185	20	95			NIL
120'					7-13	115	30	85			NIL
Minor chloritic shale, 140'-150'.					7-14	125	20	75			NIL
140'					7-15	60	20	95			NIL
					7-16	60	10	65			NIL
160'					7-17	95	10	75			NIL
170'											
END OF HOLE.											

JACKHAMMER BIT 2½" DIAMETER.

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY TENNANT CREEK, N.T.

DRILL NO. ROC 600 TYPE ATLAS COPCO	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY B.A. TAPP; DRAWN BY B.A. TAPP; CHECKED BY
DRILLER F. MILLER; COMMENCED 24.10.67; COMPLETED 24.10.67	REFERENCES: IVANAC. J.F. B.M.R. BULL. 22. Pl.	SHEET 3 OF 11; DRAWING NO.

GD130

E 53/A 14/216 G69/81E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON - DRILLING — GIGANTIC GOLDMINE — REMARKS: 1" = 20'

HOLE No.: 4 — CO-ORDINATES: 85 N / 1290 W. — R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. — ANGLE FROM HORIZONTAL: 90° — DIRECTION: -

DESCRIPTION OF CORE	R.L. CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
Medium-grained, yellow sandstones.		JACKHAMMER BIT 2½" DIAMETER.			8-01	15	20	30			NIL
					8-02	60	10	35			NIL
20' Brown shales. Chloritic in part.					8-03	10		25	20		NIL
					8-04	75		150	20		NIL
40' Minor quartz and hematite associated.					8-05	35	10	50	20		NIL
					8-06	5		40	20		NIL
60' Chloritic shale.	H Q				8-07	40	10	50	40		NIL
Quartz-hematite	H Q				8-08	40		70	100		NIL
80' abundant (c. 30%).	H				8-09			50	20		NIL
Chloritic shales.					8-10			40	20		NIL
100' Minor quartz-hematite, 100'-110',	H Q				8-11	10	10	70	40		NIL
					8-12	45	10	50	40		NIL
120' and 140'-150'					8-13	5		35	40		NIL
					8-14	10	10	60	40		NIL
140'	H Q				8-15	10	10	95	100		NIL
150'											
END OF HOLE.											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO.: RDC 600
TYPE: ATLAS COPCO
DRILLER: F. MILLER
COMMENCED: 25.10.67
COMPLETED: 25.10.67

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES: IVANAC, J.F. B.M.R. BULL. 22. PI.

HEAD OFFICE
LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:
SHEET 4 OF 11.
DRAWING No.

GD130

E53/A14/216 G69/82E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON - DRILLING ... GIGANTIC GOLDMINE. REMARKS: 1" = 20'

HOLE No. 5 CO-ORDINATES 30 N. / 1185 W. R.L. GROUND

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: -

DESCRIPTION OF CORE	R.L. CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Ag	Mo	GOLD ASSAYS
Yellow medium-grained sandstones.					9-01	10		20			NIL
					9-02	65		80	20		NIL
20'					9-03	325	10	250	60		NIL
	H Q				9-04	200	10	150	60		NIL
40'					9-05	270	10	70	20		NIL
Chloritic Shales.					9-06	55	10	35	20		NIL
60'					9-07	15	10	80	40		NIL
Minor quartz-hematite associated 30'-40', 70'-80', and 100'-150'.	H Q	2½" DIAMETER.			9-08	10		80	60		NIL
80'					9-09	15	10	80	60		NIL
		JACKHAMMER BIT			9-10	5	10	80	60		NIL
100'	H Q				9-11	5	10	80	60		NIL
					9-12			60	20		NIL
120'	H Q				9-13	5		50	40		NIL
	H Q				9-14	5	10	40	20		NIL
140'	H Q				9-15	5	20	60	20		NIL
					9-16	5	20	40	20		NIL
160'											
END OF HOLE.											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO. ROC 600
TYPE ATLAS COPCO

DRILLER F. MILLER
COMMENCED 25.10.67
COMPLETED 25.10.67

EXPLANATION

CASING IN HOLE DURING DRILLING

REFERENCES

IVANAC. J.F. BULL. 22. Pl. B.M.R.

HEAD OFFICE

LOGGED BY B.A. TAPP
DRAWN BY B.A. TAPP
CHECKED BY

SHEET 5 OF 11
DRAWING NO.

GD130

E53/A14/216 G69/83E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON - DRILLING ..... GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No. 6 ..... CO-ORDINATES 155 S / 1090 W ..... R.L. GROUND .....

LOCATION: TENNANT CREEK, N.T. ..... ANGLE FROM HORIZONTAL: 90° ..... DIRECTION: -

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Ni	Mo	GOLD ASSAYS
F.g. yellow sandstone.		JACKHAMMER BIT 2½" DIAMETER.			10-01	5		15			NIL
					10-02	10	10	70	20		NIL
20' ?					10-03	45		500	60		NIL
Brown shales.					10-04	110		800	100		NIL
Sheared shale fragments. 40'					10-05	70	10	200	20		NIL
Micaceous hematite with quartz (c. 20%)					10-06	10		30	40		NIL
60' Sheared fragments.					10-07	45		70	20		NIL
Brown shales, with minor hematite. 80'					10-08	20		80	40		NIL
					10-09			50	20		NIL
Chloritic shales. 100'					10-10			50	20		NIL
END OF HOLE.											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO. ROC 600
TYPE: ATLAS COPCO

EXPLANATION: CASING IN HOLE DURING DRILLING

HEAD OFFICE
LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:

DRILLER: F. MILLER
COMMENCED: 25.10.67
COMPLETED: 25.10.67

REFERENCES: IVANAC. J. F. B.M.R. BULL. 22 Pl.

SHEET 6 OF 11
DRAWING NO.

GD130

E53/A14/216 G69/84E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON-DRILLING ... GIGANTIC GOLDMINE. REMARKS: 1" = 20'

HOLE No: 7 CO-ORDINATES: 15N / 975 N. R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: —

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
Fine-Med. grained sandstone		JACKHAMMER BIT 2½" DIAMETER.			11-01	5	10	20	20		NIL
					11-02	10	10	15	20		NIL
20' Brown Shales.					11-03	10		25	20		NIL
					11-04	10.		15			NIL
40'					11-05	95		15			NIL
					11-06	95		5			NIL
60'					11-07			30	20		NIL
					11-08			50	20		NIL
80' Small (1/mm) hematite fragments.	H				11-09	80		60	40		NIL
	H				11-10	20	10	100	40		NIL
100' Chloritic shales. Minor small hematite fragments.	H				11-11	5		60	20		NIL
					11-12	25		60			NIL
120'											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY TENNANT CREEK, N.T.

DRILL NO: ROC 600
TYPE: ATLAS COPCO

DRILLER: F. MILLER
COMMENCED: 26:10:67
COMPLETED: 26:10:67

EXPLANATION
CASING IN HOLE DURING DRILLING: H

REFERENCES
IVANAC. J.F. B.M.R. BULL 22. Pl.

HEAD OFFICE
LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:
SHEET: 7 OF 11
DRAWING NO:

GD130

E53/A14/216 G69/85E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON-DRILLING ..... GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No: 8 CO-ORDINATES: 65 N. / 1060 W. R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: –

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
F.g. yellow sandstone.		JACKHAMMER BIT 2½" DIAMETER			12-01	10		35	20		NIL
20' Yellow and Brown Shales.					12-02	5		150	40		NIL
					12-03			25	20		NIL
					12-04			30	20		NIL
40' Possibly represents shear zone adjacent to ironstone outcrops 70'					12-05			25	20		NIL
60' to East.					12-06			35	20		NIL
					12-07			40			NIL
	H				12-08			50	20		NIL
80' Chloritic shales. Small fragments (<1mm) of hematite	H				12-09			50	20		NIL
100' associated.	H				12-10			40	20		NIL
	H				12-11		5	50	20		NIL
120'	H				12-12		5	60	20		NIL
130'					12-13		5	60	20		NIL
END OF HOLE											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO: ROC 600
TYPE: ATLAS COPCO

DRILLER: F. MILLER
COMMENCED: 26.10.67
COMPLETED: 26.10.67

EXPLANATION

CASING IN HOLE DURING DRILLING

REFERENCES

IVANAC. J.F. B.M.R. BULL 22. PI.

HEAD OFFICE

LOGGED BY: B.A. TAPP
DRAWN BY: B.A. TAPP
CHECKED BY:
SHEET 8 OF 11
DRAWING NO:

GD130

E53/A14/216 G69/86E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON: DRILLING: GIGANTIC GOLDMINE REMARKS: 1" = 20'

HOLE No: 9 CO-ORDINATES: 120 N / 1160 N R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 90° DIRECTION: -

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD. ASSAYS
Light Yellow fine grained sandstone.		JACKHAMMER BIT 2½" DIAMETER.			13-01	5	5	20			NIL
					13-02	5	10	20			NIL
20'					13-03		10	20			NIL
					13-04		10	20			NIL
40' Light Brown Shales and mudstones.					13-05			30			NIL
					13-06			60			NIL
60'					13-07			40			NIL
					13-08			30	20		NIL
80'					13-09			50	20		NIL
					13-10			35	20		NIL
100'											
Chloritic shales, with minor hematite.	K				13-11			40	20		Tr
	K				13-12			40	20		Tr
120'											
	K				13-13			50	20		Tr
130'											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY, TENNANT CREEK, N.T.

DRILL NO. RDC 600 TYPE ATLAS COPCO	EXPLANATION CASING IN HOLE DURING DRILLING K	HEAD OFFICE LOGGED BY B.A. TAPP DRAWN BY B.A. TAPP CHECKED BY
DRILLER F. MILLER COMMENCED 26:10:67 COMPLETED 26:10:67	REFERENCES IVANAC. J.F. BULL 22. Pl. B.M.R.	SHEET 9 OF 11 DRAWING NO.

G0130

E53/A14/216 G69/87E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON DRILLING ... GIGANTIC GOLDMINE ... REMARKS: 1" = 20'

HOLE No. 10 ... CO-ORDINATES: 165 N / 1250 W ... R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ... ANGLE FROM HORIZONTAL: 90° ... DIRECTION: -

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mg	GOLD ASSAYS
Light Yellow fine grained sandstones & sandy shales.		JACKHAMMER BIT 2½" DIAMETER.			14-01	5		20	20		NIL
					14-02	5		10	20		NIL
20'					14-03			20	20		NIL
Red-Brown shales.					14-04			20	20		NIL
40'					14-05			25	20		NIL
					14-06			35	20		NIL
60'					14-07			35	20		NIL
					14-08			30	20		NIL
80'					14-09			25	20		NIL
					14-10			30	20		NIL
100'					14-11			25	20		NIL
Chloritic shales, with minor hematite.	H				14-12			25	20		NIL
120'	H.				14-13			30	20		NIL
130'											
END OF HOLE.											

GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY. TENNANT CREEK, N.T.

DRILL NO. Roc 600
TYPE ATLAS COPCO

DRILLER F. MILLER
COMMENCED 27.10.67
COMPLETED 27.10.67

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES: IVANAC. J.F. B.M.R. BULL. 22. Pl.

HEAD OFFICE
LOGGED BY B.A. TAPP
DRAWN BY B.A. TAPP
CHECKED BY
SHEET 10 OF 11
DRAWING NO.

GD130

E53/A14/216 G69/88E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: WAGON DRILLING ... GIGANTIC GOLDMINE ... REMARKS: 1" = 20'

HOLE No: 11 ... CO-ORDINATES: 210 N / 1330 W ... R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ... ANGLE FROM HORIZONTAL: 90° ... DIRECTION: —

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS: GEOCHEMICAL RESULTS Cu	Pb	Zn	Bi	Mo	GOLD ASSAYS
Micaceous hematite with quartz (c. 25%).					15-01	15		30	40		NIL
					15-02	20		30	60		NIL
20'					15-03	10		40	40		NIL
Red-Brown sandy shales, quartz and hematite associated in minor amounts.					15-04	10		60	40		NIL
40'					15-05	5		80	40		NIL
					15-06			70	40		NIL
60'					15-07			50	20		NIL
Grades into, light Brown shales and mudstones.					15-08			40	20		NIL
80'					15-09			40	20		NIL
					15-10			35	20		NIL
100'					15-11			80	60		NIL
					15-12			90	60		NIL
120' Chloritic shales.					15-13			30	20		NIL
					15-14			30	20		NIL
140'											

JACKHAMMER BIT 2½" DIAMETER.

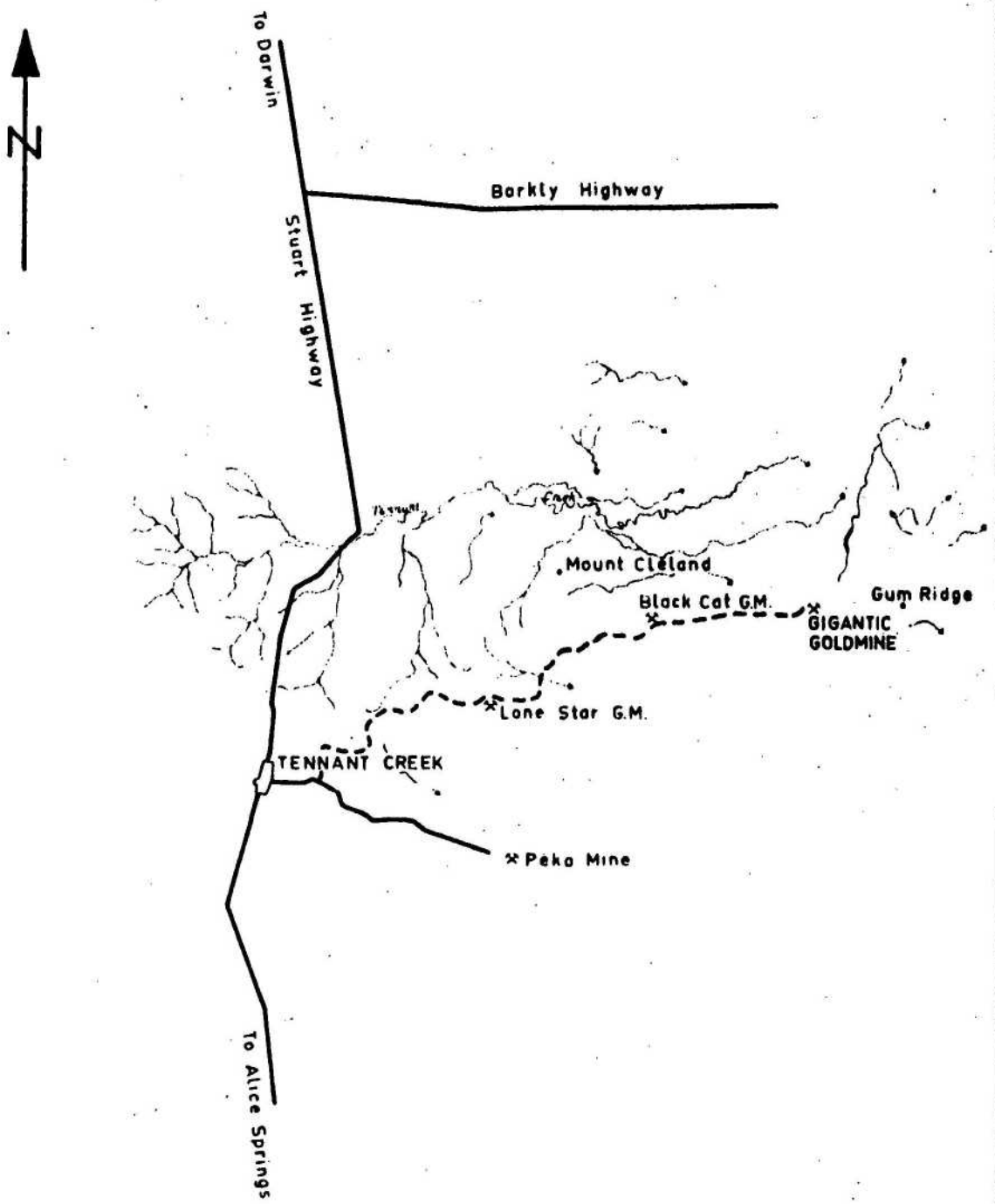
GOLD ASSAY IN DWTS/TON. ASSAYED AT GOVT. BATTERY. TENNANT CREEK, N.T.

DRILL NO. RDC 600	EXPLANATION	HEAD OFFICE
TYPE ATLAS COPCO	CASING IN HOLE DURING DRILLING	LOGGED BY B.A. TAPP
DRILLER F. MILLER	REFERENCES	DRAWN BY B.A. TAPP
COMMENCED 28·10·67	IVANAC J.F. B.M.R. BULL. 22 Pl.	CHECKED BY
COMPLETED 28·10·67		SHEET 11 OF 11
		DRAWING NO.

GD130

E53/A14/216 G69/89E

PLATE 1



LOCALITY MAP

GIGANTIC GOLDMINE

TENNANT CREEK

5 0 5 Miles

SCALE 1:250,000

E53/A14/206

G69/62E

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN JULY 1969

GEOLOGY OF THE GIGANTIC GOLDMINE TENNANT CREEK

100 50 0 100 200 Feet

SCALE 1" = 100'

LEGEND

- Quartz-Hematite Lode
- Shales, Mudstones, Siltstones
- Lamprophyre
- Sandstones
- Brecciated Sediment
- Dip
- 50' — Formlines (relative)
- Shaft
- Diamond Drill Hole
  - U.U. = United Uranium N.L.
  - A.D. = Australian Development N.L.
  - 1 Mines Branch Drill Hole Reference
- x1 Wagon Drill Hole
- • Sample locations (Values in dwts/ton)
  - N = Nil Tr = Trace

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN JULY 1969

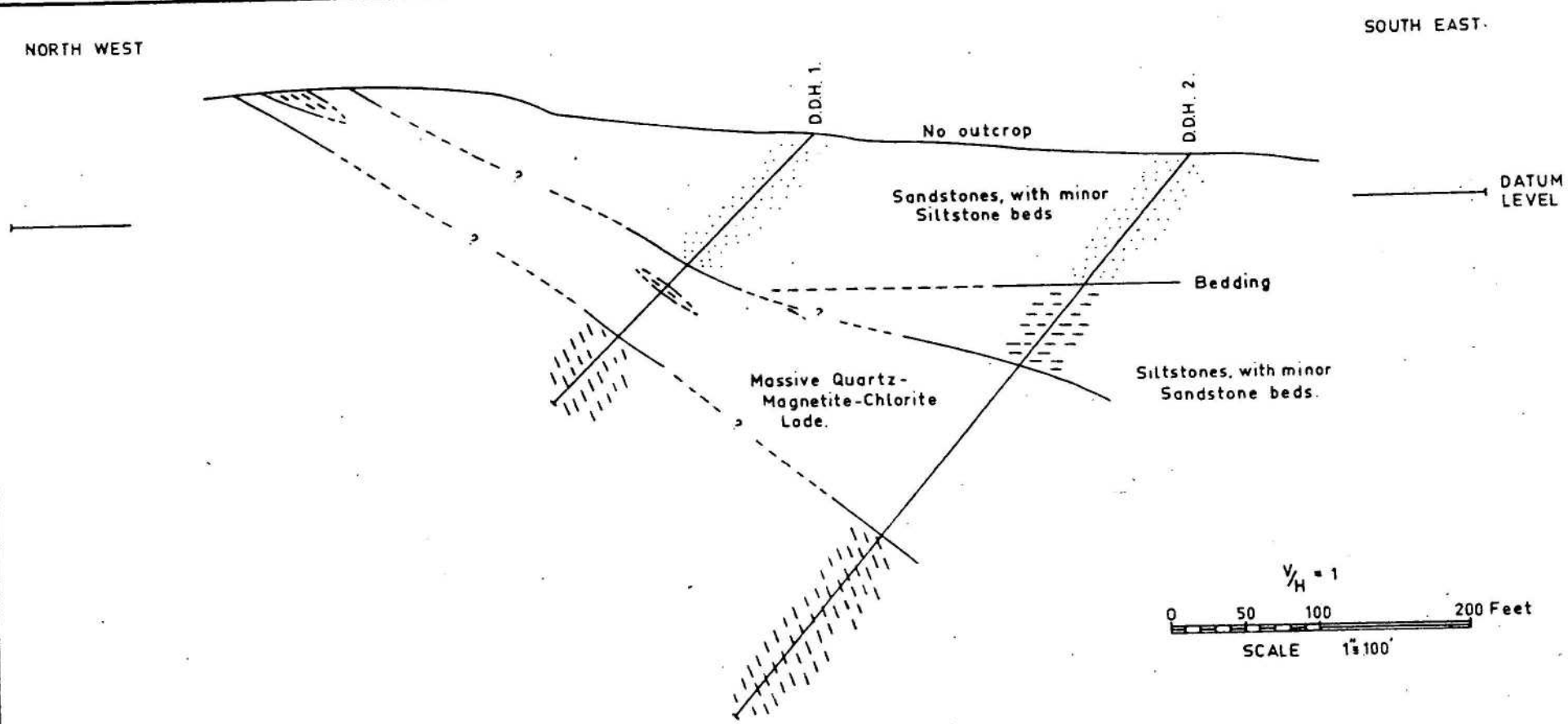
To accompany Record 1971/50

E53/A14/207
G69/63B

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN JULY 1969

To accompany Record 1971/50

E53/A14/208
G69/64B



CROSS SECTION D.D.H. 1 & 2

GIGANTIC GOLDMINE

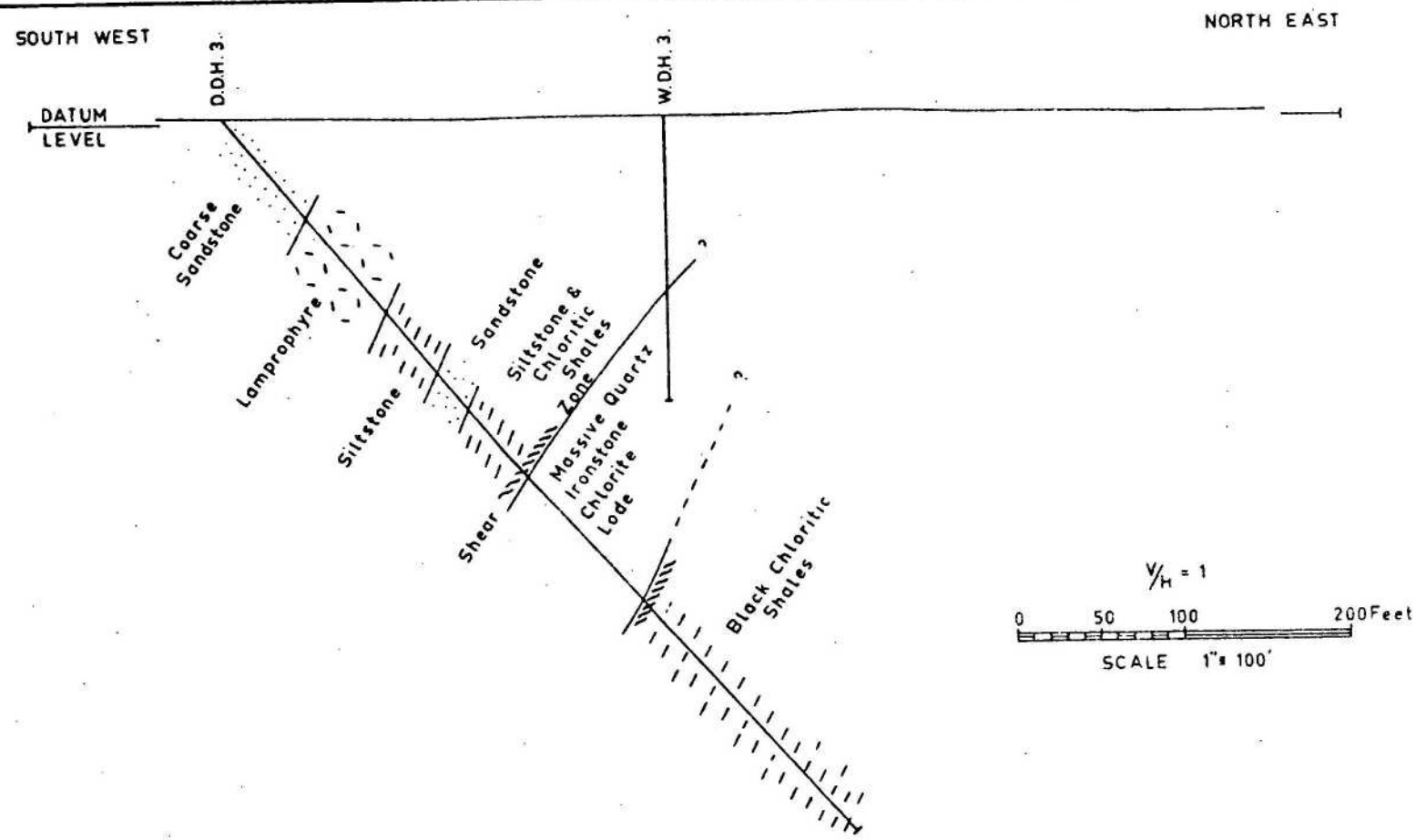
TENNANT CREEK

PLATE 4

G69/65E

E 53/A14/209

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN JULY 1969



CROSS SECTION D.D.H.3.

GIGANTIC GOLDMINE

TENNANT CREEK

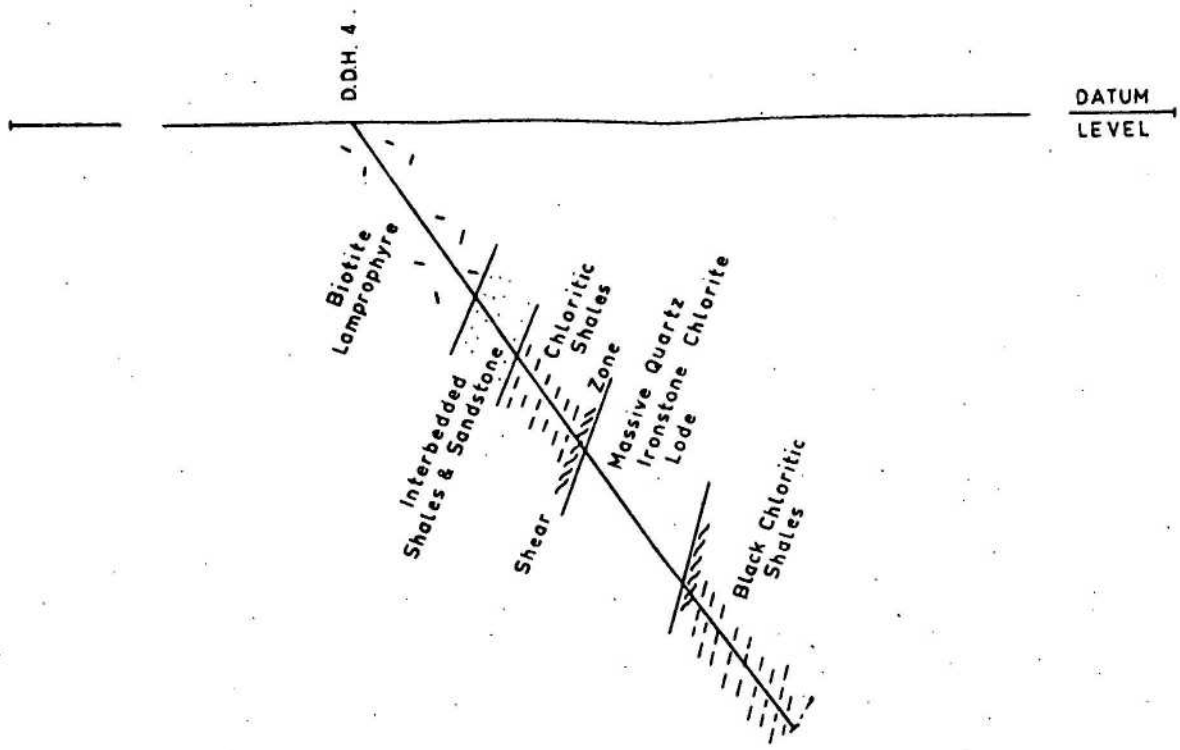
PLATE 5

G69/66E

E53/A14/210

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN JULY 1969

PLATE 6



CROSS SECTION D.D.H. 4

GIGANTIC GOLDMINE

TENNANT CREEK

V/H = 1

0 50 100 200 Feet

Scale 1" = 100'

COMPILED BY RESIDENT GEOLOGICAL SECTION
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G69/67E

E 53/A14/211

REPORT ON INVESTIGATIONS AT ANOMALY 4 NEW COMET RESERVE

TENNANT CREEK

- by -

M.R. DALY and A. TAUBE

RECORD 1971/50

CONTENTS

SUMMARY

Four diamond drill holes totalling 2,877 feet of drilling were put down to test magnetic anomaly 4 Burnt Shirt area, Tennant Creek. A series of ironstone bodies were intersected in diamond drill holes 3 and 4, and a minor intersection was made in D.D.H. 2.

80 holes were wagon drilled to test for shallow ironstone, and also for anomalous geochemical values associated with deeper quartz-magnetite bodies. Four holes intersected quartz-hematite.

This report describes the geological investigations and the results of the drilling programmes carried out in the area.

INTRODUCTION

Anomaly 4 is located about 3 miles on a true bearing of 80° from Tennant Creek Township and is east of the Burnt Shirt and Kathleen mines. A track leads Northwards from the Government Battery for a mile and then eastwards for approximately 1½ miles to the locality.

The magnetic anomaly, located in the north western aeromagnetic ridge area, was originally defined by a Bureau of Mineral Resources detailed aeromagnetic survey (Milsom & Finney, 1964). In 1967, the Resident Geologist conducted a survey to test some anomalies located in the aeromagnetic survey. Two diamond drill holes sited to test Anomaly 4 failed to intersect significant ironstone. The anomaly was re-assessed in August 1967 by a B.M.R. Ground Geophysical Party. (Haigh, in prep.). D.D.H. 3 sited on these recommendations intersected quartz-magnetite (some hematite) lode. D.D.H. 4 also intersected ironstone.

The area was geologically mapped, largely by A. Taube.

GEOLOGY

GENERAL

The regional geology can be seen on the Tennant Creek 1:63,360 Geological Series Sheet (Crohn & Oldershaw, 1964). Within the grid area, a sedimentary sequence belonging to the Warramunga Group of Lower Proterozoic age is folded into an anticline; minor ironstone bodies occur in the southern limb of the anticline.

Porphyry underlies an alluvial flat in the southern part of the grid.

Depth of oxidation of the rocks is in excess of 300'.

LITHOLOGY

Warramunga Group

The Warramunga Group consists of interbedded greywacke and shale/slate with rare siltstone; a distinctive thin-bedded hematitic shale unit (the "Hematite Shale" of Crohn & Oldershaw), crops out in the northern part of the grid.

..14/

Individual beds of the sequence are usually only a few feet thick. The greywacke is mainly fine to medium-grained and drill cores reveal distinct graded bedding. Shale beds commonly have a well-developed slaty cleavage.

Minor beds of Hematitic Shale were intersected in D.D.H. 2, but these could not be correlated with surface exposures. The sediments are very sheared and chloritic in zones adjacent to ironstone bodies.

PORPHYRY

Porphyry was intersected in D.D.H. 1 from 30' to 392' 6", and thus underlies part of the area depicted as "Silt flat" on the geological map. This rock could be part of a large body which extends under detrital cover as far as the porphyry outcrop 1½ miles west.

The porphyry consists of coarse phenocrysts of quartz and feldspar in a predominantly chloritic matrix. The quartz is typically in the form of elliptical blebs, commonly with a "tail" at one or both ends. Feldspars are generally angular but are rarely round and may also have a "tail"; they are sometimes zoned. Both quartz and feldspar commonly show the pattern of irregular chloritic inclusions which Elliston (Geopeko, Pers. Comm.) describes as "syneresis cracks". The porphyry matrix is generally chloritic but is locally silicious.

A small outcrop of extremely weathered porphyritic material occurs in the creek east of D.D.H. 1 (plate 2.).

The porphyry core from D.D.H. 1 was closely examined for magnetic material and for chalcopyrite; no trace was found of either.

The contact of the porphyry with sediments appears to be intrusive; angular sedimentary fragments are surrounded by porphyry. Adjacent to the contact the sediments are relatively unaltered except for a 3" zone of hornfels.

IRONSTONE

Ironstone bodies crop out near the centre of the grid. They are generally elliptical masses trending east-west, parallel to the regional cleavage; the largest is about 80 feet long and 30 feet wide. They vary in composition from cellular hematite to dense massive hematite or quartz-hematite; the prominent "butte" 75' north of 0N/4W has a central core of predominantly quartz and an outer zone of cellular hematite.

D.D.H. 2 intersected iron mineralisation between down hole depths 275' and 286' within very sheared sediments.

A number of quartz-magnetite-hematite lenses were intersected in Diamond drill holes 3 and 4 at vertical depths greater than 500 feet. The drillholes were located on the geophysical grid coordinates 1S/1W. Down hole intervals of ironstone are as follows:

D.D.H. 3 : 684' - 711', 731' - 744', 818' - 817'.

D.D.H. 4 : 500' - 525', 694' - 700', 782' - 857', 866 - 900'.

..15/

The ironstone is not entirely massive; some iron oxide occurs in disseminated form, replacing altered slate (Appendix I).

Sediments are chloritic, locally talcose, and strongly sheared in zones adjacent to the ironstones.

No significant mineralisation was intersected in D.D.H. 3. Three 5' intervals containing more than 1% copper were intersected in D.D.H. 4 (see Drilling and Assay Results section).

STRUCTURE

The Warramunga Group sediments are folded into an anticline plunging gently west. Bedding on either side of the axial plane dips about 70°, but local variations occur such as the contorted Hematite Shale band at the grid coordinate position 3N/6W.

Cleavage is well developed in lutaceous beds and trends about 260°, dipping nearly vertically.

The quartz feldspar porphyry body is apparnetly intrusive and may be a continuation of the body that crops out 1½ miles to the west.

The ironstone bodies are associated with faulting or shearing in rocks of the Warramunga Group. The rubbly body 25' north of 2N/4W and the prominent hill of ironstone 75' north of ON/4W are associated with shear zones trending approximately 270°. Wagon drill intersections to the east of the hill indicate a steep southerly to vertical dip.

The series of ironstone intersections in diamond drill holes 3 and 4 are difficult to correlate. There could be one very irregular, fairly flat dipping body, but a more likely explanation is a series of discontinuous ironstone lenses, emplaced in steep southerly dippingand E-W trending shear zones.

DRILLING AND ASSAY RESULTS

D.D.H. 1 was drilled to test a magnetic anomaly originally defined by a B.M.R. aeromagnetic survey (Milsom and Finney, 1964) and located on the ground by the Resident Geologist. Following is a summary of the lithology:

0' - 30'	:	No core - alluvium
30' - 392'6"	:	Quartz - feldspar porphyry.
392'6" - 695'	:	Interbedded greywacke and shale/slate.

No mineralisation was intersected, and none of the core was assayed.

D.D.H. 2 was sited to test the possibility that the small ironstone at ON/OW was related to the magnetic anomaly. The following is the succession intersected:

0' - 22'	:	No core-alluvium and weathered bedrock.
22' - 275'	:	Interbedded greywacke and shale/slate.
275' - 286'	:	Ironstone.

..16/

286' - 301' : Chlorite schist.

301' - 355' : Interbedded greywacke and shale/slate. The highest gold assay was 0.8 dwts/ton between 286' - 290'.

D.D.H. 3 was sited on the recommendations of J. Haigh (Geophysicist, B.M.R. Canberra). The lithology is as follows:

0' - 60' : No core - alluvium and weathered bedrock.

60' - 684' : Interbedded sandstone (greywacke) and shale/slate.

684' - 711' : Disseminated magnetite in talc - chlorite altered fine grained sediments.

711' - 716' : Quartz - chlorite vein.

716' - 731' : Interbedded sandstone/slate.

731' - 744' : Ironstone (quartz-chlorite-magnetite).

744' - 818' : Interbedded sandstone/slate.

818' - 847' : Ironstone.

847' - 914' : Interbedded sandstone/slate.
The highest gold assay was 2.4 dwts/ton between 745' - 750'.
There is no significant copper mineralisation.

D.D.H. 4 was drilled to further test the ironstone bodies intersected in D.D.H. 3. A summary of the lithology follows:

0' - 40' : No core - alluvium and weathered bedrock.

40' - 500' : Interbedded sandstone/slate.

500' - 525' : Ironstone (quartz-magnetite).

525' - 538' : Disseminated magnetite in talc-chlorite altered slate.

538' -693'6" : Slate/minor sandstone.

693'6" - 700' : Magnetite zone.

700' - 732' : Interbedded sandstone/slate.

732' - 857' : Magnetite zone : massive quartz - magnetite 743' - 751',782' - 850'; rest of zone consists of disseminated magnetite in chloritic slate.

857' - 866' : Chloritic-talc-dolomite rock.

866' - 914' : Magnetite zone : massive quartz - magnetite.

..17/

886'6" - 899'6" : rest of zone contains disseminated magnetite within sediments.

The highest copper assays are 1% (500' - 505'), 1.2% (510' - 515') and 1.1% (780' - 785').

Wagon drill holes 35, 69, 76 and 77 located east of the prominent hill, intersected quartz-hematite with some sediment between 80' and 150'. All other holes intersected typical greywacke/shale sequence of the Warramunga Group.

Drilling indicates that the outcropping hematite in the vicinity of W.D.H.'s 17, 18 and 19 is only surface rubble.

W.D.H.'s 1 to 8 intersected some sheared chloritic sediment typical of zones adjacent to ironstone. This drilling confirms that the outcropping hematite at ON/OW is the surface expression of an almost vertically dipping pipe like body, and is not related to the quartz-magnetite intersected in D.D.H.'s 3 and 4.

The results of the geochemical survey are inconclusive. Copper values do, however, increase in the vicinity of the ironstone intersections east of the butte.

CONCLUSIONS AND RECOMMENDATIONS

Ironstone occurrences are related to shear zones within the southern limb of the anticline.

At grid station ON/OW, the hematite outcrop appears to be a surface expression of the small ironstone intersection in D.D.H. 2. Drilling indicates that the body is pipe-like, occurring in a steep southerly dipping shear zone.

The quartz-magnetite intersections in diamond drill holes 3 and 4 are probably separate bodies, emplaced in east-west trending shear zones. D.D.H. 4 contains encouraging copper mineralisation.

Quartz-feldspar underlies part of the grid. By comparison with known mines in the Tennant Creek field, the proximity of porphyry to ironstone makes the area favourable to the presence of mineralisation.

Two additional drill holes are recommended to further test the ironstones: D.D.H. 5 collared at 50' south of grid station 2S/OW and depressed 75°N, and D.D.H. 6 collared at position 2S/2W and angled 75°N.

Wagon drilling assisted in interpreting the structure of some of the ironstone bodies. No significant geochemical anomalies were located.

The two anomalies to the west, and coliniar with Anomaly 4 should be tested by diamond drilling. These are designated A.R. 1 and A.R. 2.

..18/

REFERENCES

MILSOM, J.S. & FINNEY, W.A., 1965 - Tennant Creek Detailed Aeromagnetic Survey, Northern Territory 1964. Bur. Miner.Resour. Aust. Rec. 1965/50.

CROHN, P.W. & OLDERSHAW, W., 1965 - The Geology of the Tennant Creek One-mile Sheet Area, N.T. Bur. Miner. Resour. Aust. Rep. No. 83.

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WILLIAMS, J.P., 1969 - Tennant Creek Ground Magnetic Survey, 1969. Bur. Miner. Resour. Aust. Rec., in prep.

APPENDIX I

GEOLOGICAL LOGS OF DIAMOND DRILL HOLES 1, 2, 3, 4.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA — REMARKS: GEOPHYSICAL ANOMALY

HOLE No.: D.D.H. 1 — CO-ORDINATES: — R.L. GROUND:

LOCATION: — ANGLE FROM HORIZONTAL: 70° — DIRECTION: 0° mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Roller bit - no core rec. Lithology is sand, gravel		NON-CORING		NIL			
No recovery: sand, gravel.		NX CASING CORE 3½"		20			
Porphyry, quartz-feldspar. Buff, weathered.		NX 2⅛"		34, 27, 85, 27, 83		Porphyry shows no magnetic reaction.	

DRILL NO. 3

TYPE EDECO Mk VI

DRILLER Mines Branch

COMMENCED 3/4/67

COMPLETED 29/5/67

CASING IN HOLE DURING DRILLING

EXPLANATION: Gravel

REFERENCES: Porphyry

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CHECKED BY

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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4 - BURNT SHIRT AREA REMARKS:

HOLE No: D.D.H. 1 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 70° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Porphyry, quartz-feldspar. Brown, weathered.		NX 2 1/8"		100			
Siliceous zone - Porphyry, grey, hard. Coarse feldspar, pink and white, angular, (rarely round) zoning and inclusions common, and quartz, coarse, rounded, also w/ inclusions. Matrix siliceous.		NX 2 1/8"		100			
Porphyry, quartz-feldspar, Brown, weathered. Rare dark brown stain along fractures is probably manganese		NX 2 1/8"		100, 85, 23, 38		Porphyry shows no magnetic reaction.	
6" rec: Quartz, white. Rare chert, chlorite, limonite, sulphide stain (?)		NX 2 1/8"		10			
Porphyry, brown, weathered.		BX 1 5/8"		35			
Quartz vein		BX 1 5/8"		100			
Porphyry, grey-brown, less weathered.		BX 1 5/8"		100			
1/2" Lamprophyre(?) dike - Quartz rim, epidote(?) crystals, dark green, long, slender, striated, and red granules (garnets?)		BX 1 5/8"		100			
Porphyry, quartz-feldspar, grey-brown, less weathered. Feldspars coarse, pink & white, sometimes zoned, gen. angular, rarely elliptical. Quartz rounded, "syneresis" cracks common. Matrix fine, grey - quartz & chlorite.		BX 1 5/8"		100, 100, 100		The term "Syneresis cracks" is here used to describe the typical pattern of inclusions in a crystal. They are usually irregular, elongate, and radially arranged; they are composed of chlorite and quartz. The term has no genetic implication.	

DRILL NO:
TYPE:
DRILLER:
COMMENCED:
COMPLETED:

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY NO. 4, BURNT SHIRT AREA REMARKS:

HOLE No: D.D.H. 1 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 70° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Porphyry, quartz-feldspar. Grey, weathered to brown near fractures. Feldspars coarse, pink and white, sometimes zoned, gen. angular, rarely ellipsoidal with "tails" Quartz coarse, rounded; "Syneresis" crack pattern common. Matrix fine, grey, hard.		BX 1 5/8"		100			
- Fracture zone: weathered. ¼" Chlorite veins at 231'.				100			
1" Inclusion - Graywacke(?) Brown, fine-medium grained, hard, siliceous. (238'8")				100			
- Fracture zone: weathered				100			
- Fracture zone: weathered						Porphyry shows no magnetic reaction.	
- Fracture zone: weathered							
- Fracture zone: weathered							
- Fracture zone: weathered				100			
- Fracture zone: weathered							
- Fracture zone: weathered.				91			
Porphyry, brown, weathered. Some ground.				53			
						Base of intense weathering.	

Depth scale: 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300

DRILL NO:	EXPLANATION	HEAD OFFICE
TYPE:	CASING IN HOLE DURING DRILLING	LOGGED BY: A.T.
		DRAWN BY: A.T.
DRILLER:	REFERENCES	CHECKED BY:
COMMENCED:		SHEET 3 OF 7
COMPLETED:		DRAWING NO:

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA REMARKS:

HOLE No.: D.D.H. 1 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 70° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
300							
310				100			
1" Vein - Green, hard, siliceous and argillaceous material with poorly sorted, angular quartz throughout. Feldspars altered to red on either side of vein.							
320							
				100			
330 Porphyry, quartz-feldspar, grey-green. Feldspars coarse, cream, grey, pink; sometimes zoned (pink center). Rarely rounded, mostly angular. Sometimes show "syneresis" crack pattern. Quartz is coarse, rounded, sometimes has "syneresis" cracks. Matrix is grey, hard, fine-grained. Rare thin (1/4") chlorite and quartz-chlorite veins.							
				100		Porphyry shows no magnetic reaction.	
340							
		BX 1 5/8"		100			
350							
				100			
360							
				100			
370							
				100			
380							
— Vein - Green, hard, siliceous. Rock becomes siliceous — last 1': Crystals become less distinct, feldspars become red. Wisps of chlorite(?) in last 2"							
390							
3" Shale, hard, hornfelsed(?), green-grey. Passes abruptly into Greywacke, grey, fine, hard, with interbedded shale, grey, hard. Ochreous hematite along fractures in rock Mass. Tr. Py.				100		Porphyry - Sediment Contact. Intrusive: angular sediment frags surrounded by porphyry.	
400							

DRILL NO.:
TYPE:
DRILLER:
COMMENCED:
COMPLETED:

CASING IN HOLE DURING DRILLING

EXPLANATION: + + Porphyry; ~~ Chlorite

REFERENCES: Shale; Greywacke; Pyrite

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SHEET 4 OF 7
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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA REMARKS:

HOLE No: D.D.H. 1 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 70° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Greywacke- siltstone, grey, hard, fine wispy shale interbeds. Red hematite stain along fracs, slickensides. Cleavage, bedding 30°.		BX		100			
Greywacke, grey, fine to v. fine grained, hard. Distinct beds over 2' intervals. Rare minor slate interbeds. Bedding 55°, cleavage 40° to core axis. Rare red hematite stain, esp. along slate cleavage.			½" q	85			
Slate, grey, beds av. 6" thick, gen. about 50° to C.A. Rare minor interbeds graywacke, grading fine → coarse down hole. Some ground.			1" q	60			
Greywacke, grey, medium, massive.							
Slate, grey, and greywacke, grey, fine, interbedded. Rare red hematite stain in slates. Beds 55°		AX 1 1/8"		100			
Greywacke, fine → coarse, grey							
Slate, grey and grey-green.							
Greywacke, fine → coarse, grey.							
Slate, grading to fine greywacke, grading to coarse.			1" q	67			
Interbedded slate, green-grey, and siltstone, brownish. Brown color is due to finely dispersed ochreous hematite. Rare minor greywacke. Slump(?) structures rare. Cleavage 55°, bedding 60° to Core Axis. Some ground- prob. shaly ints.				50			
Greywacke, grey, grades from fine to coarse down hole.							
Greywacke, grey, grades from fine to medium down hole. Rare slate interbeds to 1' thick. Red hematite stain along fractures. Beds 60°, cleavage 50° to C.A.				100			

400 410 420 430 440 450 460 470 480 490 500

DRILL NO: TYPE: CASING IN HOLE DURING DRILLING

DRILLER: COMMENCED: COMPLETED:

EXPLANATION: Shale; Greywacke

REFERENCES: Siltstone; q Quartz

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GD130

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA REMARKS:

HOLE No: D.D.H. 1 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 70° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
Interbedded slate and siltstone.			1"q				
Greywacke, grey							
Slate grading to greywacke, med.							
Slate grading to greywacke, med.				99			
Slate, grey-green, occ. minor greywacke beds (to 1') Bedding 60°, cleavage 45°							
Slate, green-grey, rare interbeds siltstone, reddish-grey. Bedding = cleavage = 60° to Core Axis.				100			
			1"q				
			1"q				
			1"q				
			1"q				
Greywacke and slate interbedded: Regular intervals of greywacke, grading from fine to medium and coarse, then slate. Cycles about 3-4' thick. Rare thin bands siltstone, reddish-grey. Bedding 60°, cleavage 50° to Core Axis. Rare hematitic stain along fracs. Rare thin qtz-chlorite veins.		AX 1 1/8"		81			
				95			
Greywacke, grey, generally more massive than above, less shale. Medium-grained, some coarse.				100			
				100			
Shale, grey-green.							

500 510 520 530 540 550 560 570 580 590 600

DRILL NO:
TYPE:
DRILLER:
COMMENCED:
COMPLETED:

CASING IN HOLE DURING DRILLING

EXPLANATION: Shale; Greywacke

REFERENCES: q Quartz

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SHEET 6 OF 7
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GD130

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA REMARKS:

HOLE No.: D.D.H. 1 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 70° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
600 Shale, grey-green, fractured.							
Greywacke, grey, fine-med.							
Shale, green-grey.							
610 Greywacke, grey, medium-grained, massive. Rare shale.				100			
620							
← Tr. Sulphides – pyrite & chalcopyrite.							
Shale/slate, green-grey. Occ. very fine greywacke-siltstone. Rare ochreous hematite stain along fractures, and along thin beds at 634' and 636'. Bedding 55°, cleavage 45°; changes after 640' to Bedding = cleavage = 40°				90			
630			q-3"				
640							
Altered zone next to vein							
Quartz-chlorite vein.			~q~q	94			
Red hematitic zone							
Shale/slate as above.		AX 1 1/8"					
650			q-1"				
Greywacke, grey, medium, generally massive – no shale interbeds, little grading. Occ. minor quartz veins.							
660			q-1"				
				100			
670							
Interbedded slate and greywacke – beds about 1' thick. Quartz-chlorite zone (minor veins w/chorite between) at 672'				100			
680							
Greywacke, grey-green, massive, gen. medium-grained.							
690			q-1"	100			
END OF HOLE							

DRILL NO.:
TYPE:
CASING IN HOLE DURING DRILLING
DRILLER:
COMMENCED:
COMPLETED:

EXPLANATION: Brecciated shale; Shale

REFERENCES: Greywacke; Chlorite; Pyrite; Quartz

HEAD OFFICE
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CHECKED BY:
SHEET 7 OF 7
DRAWING NO.:

GD130

E53/A14/199 G69/115E

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA — REMARKS: GEOPHYSICAL ANOMALY.

HOLE No: D.D.H. 2 — CO-ORDINATES: — R.L. GROUND:

LOCATION: — ANGLE FROM HORIZONTAL: 54° — DIRECTION: 0° mgg.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Approx. 10' of alluvial gravel above weathered rock. 2' recovered- greywacke, pink, massive, medium-grained.		NX 2 1/8"					
Greywacke, light brown, medium-grained, massive, with interbedded shale/slate. Bedding 60°, cleavage 45° to core axis. Greywacke grades fine to coarse down hole.		NX 2 1/8"		93, 67			
At 42' have cream-white clay. Rest of interval is shale, biege, soft- mostly ground.		NX 2 1/8"		25			
Greywacke, pink, medium, massive, rare shale interbeds. Bedding 60° to Core Axis.		NX 2 1/8"		80			
Quartz, white, barren, interfingers greywacke as above.		BX 1 5/8"		100			
Greywacke, light brown, medium, interbedded w/shale, light pink. Bedding about 60° to C.A.		BX 1 5/8"		100			
Greywacke, massive, medium.		BX 1 5/8"		90			
Shale, biege, some fine silty banding, minor greywacke.		BX 1 5/8"		100			
Greywacke, massive, medium to fine, rare shale.		BX 1 5/8"		87			

DRILL NO: 3
TYPE: EDECO Mk VI
DRILLER: Mines Branch
COMMENCED: 12/6/67
COMPLETED: 14/8/67

CASING IN HOLE DURING DRILLING

EXPLANATION: Gravel; Greywacke; Shale; Quartz

REFERENCES

HEAD OFFICE
LOGGED BY: A.T.
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CHECKED BY:
SHEET 1 OF 4
DRAWING NO.

GD130

E53/A14/200 G69/116E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA REMARKS:

HOLE No.: D.D.H. 2 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 54° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Shale & greywacke, interbedded. Shale is silty, banded, sl. sheared(?).		BX 1 5/8"		86			
Zone of thin quartz veins							
Shale, light brown, with lenses & fine stringers of red sandy material — sl. sheared(?), minor greywacke.				100			
Shale, interbedded grey-green and red-grey, thinly banded.							
HEMATITE SHALE							
gradational to: Greywacke, pink, fine, streaky (sl. sheared?)				83			
Greywacke, pink, fine, massive.				100			
Interbedded shale and greywacke, pink, fine - very fine grained (greywacke siltstone). Minor occurrences of pale green earthy mineral disseminated and in fractures. Manganese and hematite in fract.				48			
Mudstone/shale, cream, pink, yellow, soft, weathered, massive — Brecciated(?) some light yellow clayey material.				31			
Greywacke, fine, massive.							
Bedded shale/siltstone, bedding 60°, cl. 45° to core axis.				100			
Greywacke, fine, massive.							
Interbedded greywacke-shale sequence, regular: beds 1-3' thick, grade from shale to greywacke, medium, down hole. Minor current bedding at 196'				100			

Depth scale: 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200

DRILL NO.:
TYPE:
CASING IN HOLE DURING DRILLING
DRILLER:
COMMENCED:
COMPLETED:

EXPLANATION: Greywacke; Shale

REFERENCES: Hematite Shale (Crohn 1964)

HEAD OFFICE
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SHEET 2 OF 4
DRAWING NO.:

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E53/A14/200 G69/117E

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA — REMARKS:

HOLE No.: D.D.H. 2 — CO-ORDINATES: — R.L. GROUND:

LOCATION: — ANGLE FROM HORIZONTAL: 54° — DIRECTION: 0° mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Greywacke, buff, med., massive				100			
Shale, some sl. silty, gen. massive.				100			
Greywacke, massive, medium.							
Shale/slate, massive; minor siltstone in last 4'. Cleavage 45° to core axis.				100			
Qtz vein at 234'				84			
Broken zone - poor recovery & mainly shale, some greywacke		BX 1 5/8"					
2" greywacke, then irreg. contact w/ shale, grey-brown, grades to							
HEMATITE SHALE, poorly dev.							
Sharp irregular contact of Hematite Shale with greywacke, v.f.g., grades down hole to medium-grained. Rare minor shale. Bottom contact sharp, irreg.				86			
HEMATITE SHALE(?) v. poorly dev.							
Greywacke, medium, massive							
Interbedded greywacke-shale; greywacke graded. Minor open fractures w/ goethite & manganese encrustations.							
Shale-breccia zone: network of open fractures AA along bedding(?) planes in silic. tan shale.				100			
Interbedded greywacke-shale with minor open fractures as at 251-256'							Au (Dwt./ton)*
Interbedded greywacke & shale, sl. brecciated, limonite & manganese in fracs. L. Brown.					196362		Nil
					363		Nil
Brecciated mudstone/shale, red, some sl. silty. Frac. fillings of manganiferous material.				100	364		0.3
					365		Tr.
IRONSTONE LODE: 4" mudstone, black, massive, soft. Slicked contact w/ Qtz-hematite, varying proportions - some spongey, some massive, dense.			q q		366		Tr.
Sheared sed. material - red & buff, wispy					367		Tr.
Qtz-hematite, spongey, massive. Sed. inclusions, Tr. Bismuth carbonate.			q q	70	368		Tr.
6" rec. - ironstone frags & mud.					369		0.4
Hematite, soft, spongey, massive. Rare qtz., irreg. incl. of red mudst.					370		0.5
Bent core barrel - 6' rec: (probably from top of interval) Upper 4' - chlorite schist, green, greasy, fractured; limonite and hematite along fractures. Lower 2' - as above but more shaly.		AX 1 1/8"	?	40	372		0.8
					373		0.3
					?		

DRILL NO.: TYPE: DRILLER: COMMENCED: COMPLETED:

CASING IN HOLE DURING DRILLING

EXPLANATION: Ironstone; Shale; Greywacke; Hematite Shale; Breccia; Chlorite

REFERENCES: q - Quartz

* Assays by J. Edwards, Battery Manager, Tennant Creek.

HEAD OFFICE: LOGGED BY A.T. DRAWN BY A.T. CHECKED BY: SHEET 3 OF 4 DRAWING NO.:

GD130

E53/A14/200 G69/118E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, BURNT SHIRT AREA REMARKS:

HOLE No: D.D.H. 2 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 54° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
300							
Shale, grey-green, highly cleaved and fractured — poor core rec. Minor sandy greywacke at base of interval.				22			
310							
Shale, silty, poorly banded, pink-brown, hard, gen. poorly cleaved.		AX 1 1/8"		69			
320							
Greywacke, massive, fine-med.							
330							
Greywacke with minor red and grey siltstone-shale, poorly interbedded. Recovery mostly from top of interval.				41			
340							
Greywacke, massive, medium, red-grey. Zones of contorted, thin-bedded dark grey and red fine sandstone/siltstone (which resemble Hematite Shale but are sandy) at 347', 352', 353'				94			
350							
END OF HOLE							
360							

DRILL NO:
TYPE:
CASING IN HOLE DURING DRILLING

EXPLANATION: Shale; Greywacke

REFERENCES: Hematite Shale

DRILLER:
COMMENCED:
COMPLETED:

HEAD OFFICE
LOGGED BY: A.T.
DRAWN BY: A.T.
CHECKED BY:
SHEET 4 OF 4
DRAWING NO:

GD130

E53/A14/200 G69/119E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4, NEW COMET RESERVE 298 — REMARKS: MAGNETIC ANOMALY : SCALE 1" : 10'

HOLE No: D.D.H. 3 — CO-ORDINATES: 43/1W — R.L. GROUND:

LOCATION: 3 MILES EAST TENNANT CREEK — ANGLE FROM HORIZONTAL: 70° — DIRECTION: 0° MAG.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
10', 20', 30', 40', 50', 60'		NON CORING ROLLER BIT		NIL			
Interbedded SANDSTONE/SHALE: pink - fawn coloured bedding 56° to C.A. beds usually <1'. (70', 80', 90')		NX		30%, 36%, 20%		True dip ~74°S	

DRILL NO:
TYPE:
CASING IN HOLE DURING DRILLING

EXPLANATION: b: bedding ∡; cl: cleavage ∡; All angles measured to core axis (C.A.)

HEAD OFFICE

LOGGED BY: M.R.DALY
DRAWN BY: M.R.D.
CHECKED BY:

DRILLER: MINES BRANCH
COMMENCED:
COMPLETED:

REFERENCES: SANDSTONE (F: Fine, M: Medium, C: Coarse); SHALE/SLATE; DISSEMINATED, MASSIVE — IRONSTONE

SHEET 1 OF 10
DRAWING NO:

GD130

E53/A14/201 G69/120E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4, NEW COMET RESERVE 298 REMARKS: MAGNETIC ANOMALY SCALE 1" = 10'

HOLE No. D.D.H. 3 CO-ORDINATES 4S/1W R.L. GROUND

LOCATION ANGLE FROM HORIZONTAL 68° @ 200' DIRECTION

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
110' 120' 120' 140'				12 50%			
SANDSTONE & SHALE interbeds: pink & fawn. Sandstone contains quartz, feldspar, biotite; graded M-C → F. Some shale-sandstone boundaries disrupted. Shale beds at: 146'-146'6" 153'-153'6" 155'-155'9": b.c. = 64°. 158'10"-159'3" 161'-162'3" 162'3"-164' 164'3"-165' 165'6"-166' 167'9"-168'6" 169'-169'9" 150' 160' 170'		NX		85% 80% 90% 75%		True dip = 68°S	
Interbedded SANDSTONE/SHALE: beds: laminae → 6" thick. pink, fawn & grey bedding ∠ 35°-50° 184'-184'6": patches & veinlets of hematite. 180' 190'				95% 96%			
SANDSTONE & SHALE interbeds: pink-fawn; grading M-C → F				85%			

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. Daly; DRAWN BY M.R.D.; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES: Q: QUARTZ VEINING; CHL.: CHLORITISATION; S: SHEAR ZONES	SHEET 2 OF 10; DRAWING NO.

GD130

E53/A14/201 G69/121E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No: D.D.H.3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 68° @ 200' DIRECTION:

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Shale beds at: 193'-193'6" ; 195'-196' 198'-200': ≈ thin Sandstone, b.=50° 207'9"-208'9": " " , b.=40° 210' 209'-210'6": " " , b.=50° 211'3"-211'6" ; 216'-216'2" ; 217'6"-218'. 220'		NX		100% 89%			
SHALE ≈ thin SANDSTONE interbeds pink ; intermixing of phases. b.=45°.				89%			
230' SANDSTONE ≈ SHALE interbeds: graded ; Mn staining. Shale beds at: 229'-229'3" 231'6"-232'3" 235'-237'3": ≈ thin sandstone; b.=45° 238'-238'2" 240' 240'9"-241' 244'-244'6" 247'-247'9" 250'				97% 97%			
SHALE ≈ minor SANDSTONE: contorted veinlets + patches of Mn. 260' bedding planes not well defined.				47%			
SANDSTONE ≈ SHALE interbeds: graded; pinkish grey. 270' Shale beds at: 265'6"-268': minor thin sandstone; b.=45° 269'3"-271': b.=50°; well developed cl.=65° 271'9"-276': ≈ thin sandstone: b.=44°, cl.=38° 277'6"-277'10": 278'6"-281'6": Sandstone ≈ thin shale 280' 285'-285'6": Sheared, chloritic ≈ Mn. 287'-287'6": " " " " 293'-296': ≈ thin sandstone: b.=45°, cl.=35° 297'-298': b.=45° 298'6"-299'6" 301'6"-302'6": cl.=31°; patches of Alunite. 302'6"-303'9" 290' 304'8"-304'10" 307'-307'3": Sheared ≈ quartz veins. 309'-309'6" 311'8"-312': b.c.=48° 314'9"-315' 315'9"-316'9"		BX		100% 100% 84%		True dip ~28°S	

DRILL NO:	EXPLANATION	HEAD OFFICE
TYPE:	CASING IN HOLE DURING DRILLING	LOGGED BY: M.R. DALY
		DRAWN BY: M.R.D.
DRILLER:	REFERENCES	CHECKED BY:
COMMENCED:		SHEET 3 OF 10
COMPLETED:		DRAWING NO:

GD130

E53/A14/201 G69/122E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No. D.D.H.3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
317'9"-321': thin shale interbeds; b.=45°		BX					
321'-322'10": b.=45°, cl.=38°							
329'-330': b.c.=43°							
335'8"-335'8"							
336'4"-337'10": thinly interbedded & intermixed shale/sandstone. b.=47°				100%			
310'							
340'9"-341'							
342'6"-343'3": quartz veining // bedding							
344'-344'3"							
345'6"-346'4": b.c.=38°, cl.=30°							
347'-347'4"							
348'-348'6"							
351'-351'2"							
353'-356'6"							
320' 355'-355'9": b.c.=52°; cl.=32° (approx. same dance as bedding).				96%			
360'3"-361'6": b.c.=48°							
358'-358'2"							
363'6"-364'3"							
365'8"-366'							
367'-367'8": highly fractured, quartz & chlorite veining.							
330' 368'-368'2"							
369'6"-370': b.c.=38°							
374'3"-374'9": highly fractured.							
376'6"-377'4": b.c.=51°: quartz-chlorite filled fault 11° to C.A.				92%			
340'							
350'				96%			
360'							
370'				99%			
380' SHALE & some SANDSTONE: pink-grey. b.=45°-51°; cleavage well developed 26°@379', 14° @ 390'.				100%			
½" quartz-chlorite vein @ 380'6"							
sandstone at: 381'3"-381'6"							
385'-385'4"							
390' 388'-388'4"							
394'-395'				67%			
SANDSTONE & SHALE interbeds: grading m.c → f							

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. DALY; DRAWN BY M.R.D.; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES	SHEET 4 OF 10; DRAWING NO.

GD130

E53/A14/201 G69/123E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No.: D.D.H. 3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 62° @ 500' DIRECTION:

DESCRIPTION OF CORE	R.L. CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Quartz - chlorite veining: 404'-404'2", 409'-409'6"; 410'-410'1"; 406'6"-406'10". 410'				100%			
SHALE & minor SANDSTONE. b. = 40°; poorly developed cl. ~ 38°.				99%		True dip ~ 68°S	
SANDSTONE & SHALE interbeds. 430' shale beds at: 416'6"-417'3"; 418'-418'1"; 419'10"-420': intermixing at base; 421'-421'4"; 428'-428'2": b.c. = 51°; 436'-436'1": b.c. = 43°; 436'6"-436'7"; 438'-438'3". 430'				97%			
				80%			
440' Interbedded SHALE / SANDSTONE: grey. beds to 1' thick; 45°-53° to C.A. 450'				100%			
SHALE & minor SANDSTONE: grey to pinkish. b. = 50°; cl. = 35°-40°. 460'-461', 463'-463'6", 464'6"-464'9": sheared & quartz - chlorite veining // cleavage. 460'		BX		79%		True dip ~ 78°S	
				100%			
470' SHALE / SILTSTONE & some F-SANDSTONE: silicified; grey - greenish grey. well fractured. some thin black laminae, b. = 54°-56°. 480'				100%			
				95%			
				85%			
490' SANDSTONE & some SHALE: greenish grey; M-F. shale at: 492'3"-492'3"; 492'9"-493'11"; 499'-499'2"; 502'-502'10": b.c. = 52°; 504'6"-504'8"; 505'-505'3"				95%		True dip ~ 80°S	

DRILL NO.: TYPE:	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY: M. F. Daly; DRAWN BY: M. B. D.; CHECKED BY:
DRILLER: COMMENCED: COMPLETED:	REFERENCES	SHEET: 5 OF 10; DRAWING NO.:

GD130

E53/A14/201 G69/124E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No: D.D.H. 3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 62° @ 500' DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
SHALE & SANDSTONE interbeds: green grey. b. ∠ 50°-55°; cl. ∠ 30°-45°. Sandstone at: 508'6"-510'4": F-M. 511-512': F-M. 514'6"-515'10": M. 520'-520'4". 522'6"-523'9": graded M-F. 517'-517'4"; 515'6"-519'9": sheared, & quartz veining.		BX		95%			
SANDSTONE: medium grained, grey.		BX		82%			
SHALE & SANDSTONE interbeds: grey - greenish grey, chloritic, some silicification. cl. ∠ 25°-45°. Sandstone at: 530'8"-531': b.c. ∠ 45°, F-M. 540'-540'6": b.c. ∠ 65°, graded M-F. 537'6"-538'; 546'-548': core very fractured. Quartz vein @ 539'.		BX		100%		True dip ~ 73°S	
SANDSTONE & some SHALE: grey - pinkish grey; grading mostly M-F, some silicification. bedding plane not well defined - intermixing of sediments. Shale at: 559'6"-560'3", 562'-562'3", 564'-564'9", 565'8"-567': b.c. ∠ 50°, 569'-570'3": & sandstone, 571'3"-571'5", 584'9"-585'6", 606'3"-607', 608'-611': & sandstone: b. ∠ 47°, cl. ∠ 34°. Quartz veining @ 567', 571', 572'6"-573', 585'8", 586'-591', 610'. Sheared: 568'9"-569'.		BX / AX		100% / 49% / 99%		True dip ~ 78°S	

DRILL NO. / TYPE	EXPLANATION	HEAD OFFICE
	CASING IN HOLE DURING DRILLING	LOGGED BY: M.R. DAY
		DRAWN BY: M.R.D.
DRILLER / COMMENCED / COMPLETED	REFERENCES	CHECKED BY:
		SHEET 6 OF 10
		DRAWING NO.

GD130

E53/A14/201 G69/125E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No.: D.D.H. 3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
60' SANDSTONE & SHALE/SLATE interbeds; grey, graded from. Shale at: 611'6"-611'9"; 613'-613'6": & intermixed sand. 615'9"-616': sheared, quartz-chlorite veining; cl. 40°. 618'-619': cl. 30°-40°. 621'9"-622'6": b.c. ~55°; cl. 38°. 624'-625': sheared, quartz veining. 626'6"-627'6": 628'6"-629'3": sheared, quartz veining. 629'8"-630'6": b.c. 55°; cl. 36°. 630'9"-631'6": some sandstone. 633'-633'8": & quartz veining. 633'7"-634'. 636'-636'6". 636'9"-637'3": & sandstone. 641'-641'4": intermixed shale/sandstone. 642'-644'9": finely interbedded shale/sandstone; b. 26°			100%				
65'			96%				
SHALE/SLATE: dark grey. Some thin irregular sandstone bands. b. ~52°; cl. 20°-30°.		AX	75%			True dip ~75°S	
70' SANDSTONE & some intermixed SHALE: slightly chloritic near base.			50%				
75' MAGNETITE ZONE: fine crystals & blebs to ½" diam. of magnetite in fine-chlorite altered ?-sediment; some sed. almost completely replaced by magnetite. Shearing, polishing & slickensiding. Mineralization: pyrite throughout; minor chalcopyrite @ 692', 693', 693'6" & 698'6" (& bornite).			94%		SPLIT CORE		Au (dwts/ton)* NIL; NIL; NIL

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES: CHL.: CHLORITISATION

* Au assays carried out at Govt. Battery, Tennant Ck.

DRILL NO.:
TYPE:
DRILLER:
COMMENCED:
COMPLETED:

HEAD OFFICE
LOGGED BY: M. R. DALY
DRAWN BY: M. R. D.
CHECKED BY:
SHEET 7 OF 10
DRAWING NO.:

GD130

E53/A14/201 G69/126E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No: D.D.H. 3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 66° @ 800' DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
							NIL
718'							NIL
QUARTZ - CHLORITE BODY: a little iron; some included sediment, particularly near margins.			S-CHL.	85%	SPLIT CORE		NIL
CHLORITIC SANDSTONE + SHALE: green grey, sheared. 726'-727': quartz veining.							TRACE
720'							TRACE
FINE GRAINED SEDIMENT: sheared, replaced by talc - chlorite - magnetite, some quartz.			CHL.				0.3
730' QUARTZ - CHLORITE - MAGNETITE BODY: some included sediment near tip. scarce pyrite & chalcopyrite.			CHL. CHL. CHL.	100%			0.5
740'							0.7
							0.9
Similar to 728'8" - 730'6".			CHL. CHL.	100%			2.4
750'		AX					0.7
760'			CHL.				
CHLORITIC SLATE: dark greenish grey, silicified. cl. ~32° (well defined).				90%			
770' SLATE & numerous SANDY interbeds. bedding irregular ~40° cl. ~30°							
SANDSTONE: M-F, grey. 780'				94%			
Similar to 769'-775'6".							
790' SANDSTONE: F-M, grey. Shale: 799'-799'6"; 806'8"-805'3". slightly chloritic throughout, chlorite increasing below 800'. some shearing; a little pyrite				95%			

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. DALY; DRAWN BY M.R.D.; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES	SHEET 8 OF 10; DRAWING NO.

GD130

E 53/A14/201 G69/127E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No.: D.D.H. 3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 66° @ 800' DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
			CHL	95%			
810' CHLORITIC SLATE & some intermixed SAND: quartz veining; some fine disseminated magnetite, particularly near base; trace pyrite & chalcopyrite.			CHL				
CHLORITIC SANDSTONE: F-M. quartz veining.			CHL	74%			
820' MAGNETITE - HEMATITE - QUARTZ - CHLORITE LODE: quartz confined mainly to top 3' - up to 15%. 822'6" - 822'9": inclusion of black slate. 830' some pyrite; rare chalcopyrite. 840'			CHL	20%	SPLIT CORE		0.8 0.7 0.4 0.3 TRACE
850' SANDSTONE & SHALE interbeds: green grey, chloritic. sheared, polished, slickensided; numerous thin quartz veins. bedding planes generally irregular. Shale (slate) at: 847' - 847'3" 848' - 848'6" 860' 855'9" - 856' 857'3" - 857'9" 859' - 859'6" 861' - 862' 863'6" - 864'3" 868' - 868'6" 870' - 873': & thin sandstone, intermixing: b.c. 45°, cl. ~30°. 874' - 874'3" 879'6" - 880'3" 880'				94% 100%		True dip ~69°S	
SLATE & thin SANDSTONE: greenish black b. ~44°; cl. ~40°				100%			
890' SANDSTONE & some SHALE: dark grey: mostly M, some F. Shale at: 900'6" - 901'3": & thin sandstone, b. ~28° ~ cl. 903' - 903'3" 903'9" - 904': b. ~35°				57%		True dip ~55°S.	

DRILL NO.:
TYPE:
DRILLER:
COMMENCED:
COMPLETED:

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES

HEAD OFFICE
LOGGED BY: M.R. DALY
DRAWN BY: M.R.D.
CHECKED BY:
SHEET 9 OF 10
DRAWING NO.:

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E 53/A14/201 G69/128E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No: D.D.H. 3 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
Fairly interbedded SHALE/SANDSTONE: 910' green grey - black, chloritic. quartz veining & shearing. bedding distorted; cl. 35°-47°.		AX	CHL	59%			
END OF HOLE. 920'							

DRILL NO: TYPE:	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY: M.R. DALY; DRAWN BY: M.R.D; CHECKED BY:
DRILLER: COMMENCED: COMPLETED:	REFERENCES	SHEET 10 OF 10; DRAWING NO:

GD130

E 53/A14/201 G69/129E

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4, NEW COMET RESERVE 298 REMARKS: 1" = 10' SCALE: MAGNETIC ANOMALY

HOLE No.: D.D.H. 4 CO-ORDINATES: 168'S / 75'W R.L. GROUND:

LOCATION: TENNANT CREEK, N.T. ANGLE FROM HORIZONTAL: 85° DIRECTION: 0° Mag.

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
10' SAND + GRAVEL. 20' 30' 40'		NON CORING ROLLER		NIL			
SANDSTONE: Fine grained, becomes slightly coarser with depth. Pink + fawn, some purplish. Grains well rounded, poorly sorted. Contains quartz, biotite + clay matrix. Weakly developed foliation at slight angle to C.A. 50'		NX CORE		90%			
Shale/slate interbeds at: 42'-42'2": b.c. 40° 43'-43'2": b.c. 44° 49'-49'2": b.c. 37° 52'8"-52'10": b.c. 32° 58'8"-59'10": alternating thin shale-sandstone beds; bedding 40° 61'6"-62'6": shale, well developed cleavage // C.A. 65'-65'2": shale, contorted; some fragments in sandstone. 68'-68'4": shale, highly contorted + fragmented. 72'-73': shale, contorted. 76'-77': cleavage at higher ∠ to core axis than bedding; b.c. 35°. 77'-78': shale fragments in sandstone elongate, anastomosing pattern; larger at base. 60' 70' 80'				100%			
				68%			
89'6"-91': shale/slate, b.c. 33°. 93'-95'9": " , b.c. 28°. 90'				92%		@ 88': slight increase in grain size; sorting slightly better.	
				28%			

DRILL NO.:
TYPE:
CASING IN HOLE DURING DRILLING

EXPLANATION: SANDSTONE; SHALE/SLATE; IRONSTONE

REFERENCES: All angles measured to Core axis (C.A). b.c.: bedding contact

E53/A14/202

G69/130E

DRILLER: MINES BRANCH
COMMENCED: 2:2:48
COMPLETED: 5:7:48

HEAD OFFICE
LOGGED BY: M.P. DALY
DRAWN BY: M.P.
CHECKED BY:
SHEET: 1 OF 10
DRAWING NO.:

GD130 EJ

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No.4, NEW COMET RESERVE 298. REMARKS: 1" = 10'

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 85° DIRECTION: 0°

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
SANDSTONE: medium grained, poorly sorted, some elongate quartz. Shale 103'-104'.		NX CORE				Apparent dip = true dip = 63° S (extrapolation from surface mapping)	
SHALE: b.c. 38°							
SANDSTONE: fine - medium grained, poorly sorted. 110'				28%			
SHALE: fawn colour; bedding 38°.							
120' SANDSTONE: very fine at top, grading to fine at base with lower degree of sorting.							
SHALE/SLATE: fawn to pink. some fine sandstone interbeds, contorted contacts. 126'-128': quartz veins - lenses up to ½" wide, some arranged enechelon, mostly // bedding = 35°. 130'				91%			
SANDSTONE: fine grained.							
SHALE/FINE SANDSTONE: buff + pinkish grey: thin beds at base contorted, intermixed, brecciated.							
140' SHALE/SLATE: thin sandstone interbeds, commonly highly contorted. cleavage approx. // bedding. bedding varies 20°-40°. 150'				90%			
				97%			
160' SANDSTONE: fine grained.							
SHALE/SLATE predominately, with numerous interbeds of SANDSTONE up to 6" thick. beds highly folded near base. cleavage approx. // zone axis. bedding 30°-34°. 170'				89%			
SANDSTONE: fine grained; thin shale interbed.							
SHALE/SLATE: grey + pink; numerous thin, contorted laminae of sandstone. SANDSTONE bed 179'-180'. 180'				88%			
SANDSTONE: pink, gradation from fine at top to medium at base.							
SHALE: yellow							
SANDSTONE: mottled yellow + white, grading from fine at top to 190' medium above siltstone band at 193', + similarly between 193' + siltstone band at 195'.				98%		Grading of the turbidites indicates beds not overturned.	
SHALE/SLATE: yellow, fractured, b.c. 38°.				90%			

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING		HEAD OFFICE: LOGGED BY M.R. DALY; DRAWN BY; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES: Q: Quartz vein.	E53/A14/202 G69/131E	SHEET 2 OF 10; DRAWING NO.

GD130 EJ

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4 REMARKS:

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
SANDSTONE: fine; buff + pink. 199'-199'2": med.-coarse. 200'6"-208'6": med.-coarse; bedding contact disrupted; some of this coarser sandstone occurs as pullaparts within the basal section of the finer phase. 205'-205'4": SHALE. 210'		NX CORE		90%		200': Angle from horizontal = 84°.	
SHALE: at top, pink with black laminae, bedding 26°; at bottom, thicker pink + grey beds, bedding 26°. cleavage 75°. SHALE/SILTSTONE: pink + cream grey. sheared + injected by quartz veins between 214'-214'9", 215'-216'6".				89%			
220' SANDSTONE: fine, with pink + cream bedded shale. bedding 20°-24°. jointing in sandstone 45°-53°. 4" SHALE bands at 220', 223'9", 224'6", 227'. 224'6"-226': SHALE, bedding 30°. 230' 248'3"-249'6": SHALE, yellow-grey. 255'-256'; 258'9"-260': fractured, brecciated + injected by vein quartz.				91%			
				92%			
240'				93%			
250'				80%			
260' SHALE/SILTSTONE with minor fine SANDSTONE: pink, grey + brown. bedding 24°. 260'-267': sheared, highly brecciated + quartz injected. 270' 287'-289': core highly fractured. 280' 290'		BX CORE		69%		Dip of beds = 71°S	
				81%			
				86%			
				81%			
				71%			
SANDSTONE: fine-medium; pink.							

DRILL NO. / TYPE	EXPLANATION CASING IN HOLE DURING DRILLING		HEAD OFFICE LOGGED BY: M. R. DALY DRAWN BY: CHECKED BY:
DRILLER COMMENCED COMPLETED	REFERENCES Shear Zone.	E 53/A14/202 G69/132E	SHEET 13 OF 10 DRAWING NO.

GD130

E3

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4 REMARKS:

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Interbedded SHALE / SANDSTONE: bedding 30°, beds 6" thick. @ 314', thin quartz filled gash veins. 310'		BX CORE		51%			
SANDSTONE: fine-medium, minor SHALE. 320'				100%			
330' Interbedded pink SANDSTONE / pink & grey banded SHALE: beds become thicker downwards; bedding planes commonly disrupted, ~30°. sandstone commonly graded; fine at top, med.-coarse at base. 340'				100%			
SHALE/SLATE: pink & grey. some SILTSTONE, minor SANDSTONE bands bedding commonly disrupted; 25°-35°. 350' cleavage 20°-25°. highly fractured between 358'-358'9", 378'6"-379'. 360' 370' 380'				54% / 95%			
Interbedded pink & grey SHALE, & pink SANDSTONE: top of section, 6"-9" beds; increase in thickness with depth. sandstone dominant near base; generally shows grading from fine at top to medium at base. 390' bedding 30°-35°; contacts generally sharp at sandstone bed top & irregular at sandstone base. one bedding plane shows asymmetric ripples.				95%		Dip of beds ≈ 66's. Ripples indicate deposition current from the South.	

DRILL NO:
TYPE:
DRILLER:
COMMENCED:
COMPLETED:

EXPLANATION: CASING IN HOLE DURING DRILLING

REFERENCES

E53/A14/202

G69/133E

HEAD OFFICE

LOGGED BY: M. R. DALY
DRAWN BY:
CHECKED BY:
SHEET 4 OF 10
DRAWING NO:

GD130

EJ

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY 4 REMARKS:

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL 86° @ 400'. DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS* Cu p.p.m	Bi p.p.m	Au oz/ton
410'		BX CORE		63%					
420'				100%					
430'									
440'				100%					
450'									
460'				86%					
470'				95%					
CHLORITE-QUARTZ ROCK: dark green & white. possibly sandstone replacement; highly fractured			CHL			BASE OF OXIDATION			
480' SLATE: black when unaltered, mostly dark green due to chloritisation; chlorite disseminated, also in patches & veins. some quartz veining. 1' SANDSTONE interbeds at 468' & 495'.			CHL	87%	3824	CORE SCRAPE	<5	<20	
490' highly fractured between 494' & 500'; surfaces polished & slickensided.		AX	CHL	70%	3825		7000	<20	<0.15

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. DALY; DRAWN BY; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES: CHL: CHLORITISATION; * Assays carried out at Mines & Water Resour., Darwin.	E53/A14/202 G69/134E; SHEET 5 OF 10; DRAWING NO.

G0130 EJ

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GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4 REMARKS: R.L. GROUND:

HOLE No: D.D.H. 4 CO-ORDINATES: ANGLE FROM HORIZONTAL: DIRECTION:

LOCATION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
QUARTZ - MAGNETITE LODE: overall ratio quartz : magnetite = 40 : 60; character varies from zones of predominately quartz & magnetite veinlets to intersections of predominately magnetite. a few chlorite veins & patches of chloritised sediment. MINERALISATION: pyrite, chalcopyrite, some bornite in scattered veinlets + small patches; little mineralisation in lower 3'. 510' 520'-525': small amount light green - white talc, increasing in quantity downwards; chlorite more common in this zone. near the base, magnetite segregations have a brecciated appearance - cut by minute talc veinlets. 520'			AX CORE	70% 49%	3826 3827 3828 3829 3830	CORE SPLIT	10,000 600 <0.15 6,000 180 <0.15 12,000 700 0.3 5,500 260 <0.15 700 60 <0.15
SLATE: dark green to black, chloritic, contains disseminated magnetite; also zones of coarse crystal aggregates, developed & cut by talc. 530' fracture surfaces polished. minor quartz.				89%	3831 3832 3833	CORE SPLIT	115 40 <0.15 195 40 <0.15 1,050 260 0.3
SLATE: dark grey, hard silicified; rare thin SANDY interbeds. 560' 538'-569': greenish black, some chlorite, fractured, polished & slickensided. quartz veins @ 557'-558'; 560'-565' (10-15° to C.A). 580' cleavage: 18° @ 581': very well developed. 12° @ 640': moderately well developed. 10° @ 680': well developed. 660' 670' 680' 690'				43% 79% 82% 89% 86% 98%	3834 3835	CORE SCRAPE	15 40 <0.15 15 <20

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. DALY; DRAWN BY; CHECKED BY
DRILLER / COMMENCED / COMPLETED	REFERENCES: E53/A14/202 G69/135E	SHEET 6 OF 10; DRAWING NO

GD130

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4 REMARKS:

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: 83° @ 600' DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
610'		AX CORE		86%			
620'				97%			
630'							
640'				95%			
650'							
660'				86%			
663'-693.6': dark green, chloritic; chlorite increases with depth. core fractured; polished + slickensided surfaces.			CHL	87%			
670'			CHL				
680'			CHL	44%	3848	CORE SCRAPE	20 <20 <0.3
			CHL	90%			
690'			CHL		3849	CORE SPLIT	150 <20 <0.15
MAGNETITE ZONE (some hematite): top 3', fairly massive magnetite with quartz + chlorite veins. lower section contains magnetite (+ hem) associated with talcose slate.			CHL	96%	3850		115 40 <0.15

DRILL NO:	EXPLANATION	HEAD OFFICE
TYPE:	CASING IN HOLE DURING DRILLING	LOGGED BY: M.R. DALY
DRILLER:	REFERENCES	DRAWN BY:
COMMENCED:	E 53/A 14/202	CHECKED BY:
COMPLETED:	G69/136E	SHEET 7 OF 10
		DRAWING NO:

GD130 EJ

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANDRALY N.P.L. REMARKS:

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS		
SLATE: dark green, chloritic; fractured, surfaces polished & slickensided.		AX CORE	CHL	65%	3851	CORE SCRAPE	10	<20	<0.15
SILTSTONE / FINE SANDSTONE: hard, dark grey, silicified. minor shale. 710'									
720' chloritic at base.			CHL	93%					
SLATE: dark green to black, chloritic. 730' thin quartz veins									
MAGNETITE (some hematite) replacing CHLORITIC SLATE, in some zones almost completely: magnetite finely disseminated, also zones of coarse crystals thinly enveloped & veined by talc. 740' sugary texture common. 738'-740': chloritic slate is sheared, polished & slickensided.			CHL	96%	3854	732'3"-857': Scarce mineralisation throughout: pyrite, chalcopyrite; large patch of bornite @ 782'.	5	<20	<0.15
			CHL		3855		10	<20	<0.15
			CHL		3856		15	420	<0.15
QUARTZ-MAGNETITE LODE: 750'			Q		3857	CORE SPLIT	100	112	<0.15
Similar to 732'3"-762'6" magnetite zone. lower part is sheared, surfaces polished & slickensided.			CHL		3858		25	88	<0.15
760'			CHL	96%	3859		100	40	<0.15
					3860		20	420	<0.15
			CHL		3861		30	420	<0.15
770'					3862		20	420	<0.15
			CHL		3863		20	40	<0.15
780'			CHL	95%	3864		11,300	320	<0.15
QUARTZ-MAGNETITE (HEMATITE) LODE: chlorite veining, minor chloritic slate inclusions. 790'			Q CHL Q		3865	CORE SPLIT	1,750	164	<0.15
			Q		3866		250	50	<0.15
			Q CHL	95%	3867		75	420	<0.15

DRILL NO: TYPE:	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY: M.R. DALY; DRAWN BY: ; CHECKED BY:
DRILLER: COMMENCED: COMPLETED:	REFERENCES: E53/A14/202 G69/137E	SHEET 8 OF 10; DRAWING NO:

GD130 EJ

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANDMAY No. 4 — REMARKS:

HOLE No.: D.D.H. 4 — CO-ORDINATES — R.L. GROUND

LOCATION — ANGLE FROM HORIZONTAL 83.5° @ 800' — DIRECTION

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
		AX CORE	Q	95%	3868	CORE SPLIT	150 420 <0.15
			Q CHL		3869		620 200 <0.15
810'			Q	89%	3870		3,850 420 0.15
					3871		125 420 <0.15
820'			Q		3872		50 420 0.5
			Q CHL		3873		325 50 0.7
830'			Q	93%	3874		210 140 0.15
836'6": vugh containing quartz crystals.					3875		365 420 0.15
840'			Q	82%	3876		850 420 <0.15
			Q CHL		3877		450 800 0.15
850'			Q				
Similar to 732'8"-743'6" magnetite zone. lower 2'6": very chloritic.			CHL CHL CHL	75%	5121		15 20
CARBONATE (DOLOMITE) - TALC ROCK: white, ∃ green-grey inclusions of chloritic slate.			CHL CHL CHL		5122	Possibility of a cavity.	5 100
860'				50%	5123		45 125
			CHL		5124		45 150
SLATE: chloritic, ∃ zones of magnetite replacement: veinlets of talc associated ∃ magnetite.			CHL			Rock very friable in places → chlorite - magnetite sand sludge as the only recovered material.	
870' 886': quartz vein.			CHL	57%	5125		45 20
core very broken.					5126		<5 20
880'			CHL		5127	CORE SPLIT	5 70
			CHL Q	66%	5128		200 100
QUARTZ - MAGNETITE LODE: magnetite predominates; some chlorite.			Q CHL				
890' a little pyrite			Q	82%	5129		30 150
			Q		5130		115 70

DRILL NO. / TYPE	EXPLANATION: CASING IN HOLE DURING DRILLING	HEAD OFFICE: LOGGED BY M.R. DAY
DRILLER / COMMENCED / COMPLETED	REFERENCES: E 53/A14/202 G69/138E	DRAWN BY / CHECKED BY / SHEET 9 OF 10 / DRAWING NO.

GD130 — EJ

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT: ANOMALY No. 4 REMARKS:

HOLE No: D.D.H. 4 CO-ORDINATES: R.L. GROUND:

LOCATION: ANGLE FROM HORIZONTAL: DIRECTION:

DESCRIPTION OF CORE	R.L. / CASING	DEPTH / SIZE OF CORE	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS	
SHALE / FINE SANDSTONE: some disseminated magnetite.		EX CORE		25%	S131	CORE SPLIT	110	40
					S132		20	100
910'					S133		10	70
HOLE ABANDONED.								

DRILL NO:	EXPLANATION	HEAD OFFICE
TYPE:	CASING IN HOLE DURING DRILLING	LOGGED BY: M.R. DALY
DRILLER:	REFERENCES E53/A 14/202	DRAWN BY:
COMMENCED:	G69/139E	CHECKED BY:
COMPLETED:		SHEET 10 OF 10
		DRAWING NO:

GD130 EJ

APPENDIX II

GEOCHEMICAL AND ASSAY RESULTS. ANOMALY 4.

(Au assays in dwts/ton; Cu, Pb, Zn, Bi, Mo values in p.p.m.)

Hole No/Feet	Cu	Pb	Zn	Bi	Mo	Au
D.D.H.1.	No assays carried out.					
D.D.H.2:						
266-269						Nil
271						Nil
273						0.3
275						Tr.
278						Tr.
280						Tr.
282						Tr.
284						0.4
286						0.5
290						0.8
292						0.3
D.D.H.3:						
684-690	1,700	60	30	100	<40	Nil
690	2,150	80	250	100	"	Nil
695	2.450	60	10	180	"	Nil
700	750	30	54	50	"	Nil
705	130	40	26	50	"	Nil
710	210	120	55	20	"	Nil
715	70	60	120	20	"	Tr.
720	85	20	180	40	"	Tr.
725	15	5	20	40	"	0.3
730	50	150	120	60	50	0.5
735	165	300	30	60	<40	0.7
740	185	370	20	370	"	0.9
745	45	20	15	60	"	2.4
750	30	5	15	50	"	0.7
815-820	55	20	75	50	"	0.8
820	150	130	50	280	680	0.7
825	260	50	40	100	820	0.4
830	30	20	50	50	<40	0.3
840	25	15	70	40	<40	Tr.
D.D.H.4:						
40 -50	35	25	15	<20		
50	25	25	20	"		
60	10	20	17	"		
70	35	25	20	"		
80	40	60	25	"		
90	35	50	18	"		
100	30	25	17	"		
110	45	25	46	"		
120	40	25	39	"		
130	25	40	15	"		
140	25	40	20	"		
150	25	40	20	"		

..20/

Hole No./Feet	Cu	Pb	Zn	Bi	Mo	Au
160	40	50	24	<20		
170	30	40	24	"		
180	25	40	36	"		
190	35	20	25	"		
200	15	25	29	"		
10	20	20	27	"		
20	20	25	55	"		
30	5	10	15	"		
40	10	25	39	"		
50	10	40	25	"		
60	195	20	150	"		
70	75	20	35	"		
80	50	20	52	"		
90	80	50	66	"		
300	75	20	40	"		
310	15	40	25	"		
320	15	40	55	"		
330	15	50	65	"		
340	5	40	40	"		
350	5	20	40	"		
360	5	25	55	"		
370	5	40	46	"		
380	5	40	52	"		
390	5	25	45	"		
400	10	20	45	"		
410	10	25	52	"		
420	5	20	45	"		
430	10	20	36	<20		
440	15	40	49	"		
450	5	20	37	"		
460	10	20	36	"		
470	5	50	24	"		
480	5	20	66	"		
490	7,000	250	54	<20		<0.15
500	10,000	100	22	600		<0.15
505	6,000	50	14	180		<0.15
510	12,000	155	34	700		0.3
515	5,500	60	20	260		<0.15
520	700	25	15	60		<0.15
525	115	50	20	40		<0.15
530	195	50	30	40		<0.15
535	1,050	155	80	260		0.3
540	15	25	280	40		<0.15
550	15	25	93	<20		
560	35	10	80	"		
570	40	40	70	"		
580	15	20	40	"		
590	10	10	36	"		
600	35	50	65	"		
610	40	70	65	"		
620	35	75	65	"		
630	20	30	55	"		
640	25	40	48	"		
650	10	40	55	"		
660	5	20	260	"		

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Hole No./Feet	Cu	Pb	Zn	Bi	Mo	Au
670	90	40	280	<20		
680	20	30	240	"		<0.3
690	150	40	160	<20		<0.15
695	115	50	55	40		<0.15
700	10	30	200	<20		<0.15
710	20	30	75	"		
720	20	30	160	"		
730	5	200	85	"		<0.15
735	10	70	34	"		<0.15
740	15	40	13	<20		<0.15
745	100	850	55	112		<0.15
750	25	400	75	88		<0.15
755	100	300	25	40		<0.15
760	20	180	20	<20		<0.15
765	30	200	25	<20		<0.15
770	20	150	16	<20		<0.15
775	20	150	18	40		<0.15
780	11,300	250	50	320		<0.15
785	1,750	530	72	164		<0.15
790	250	180	62	50		<0.15
795	75	200	65	<20		<0.15
800	150	200	50	<20		<0.15
805	420	120	28	200		<0.15
810	3,850	140	25	<20		0.15
815	125	150	28	<20		<0.15
820	50	100	65	<20		0.5
825	325	212	50	50		0.7
830	210	130	40	140		0.15
835	365	360	40	<20		0.15
840	850	212	35	<20		<0.15
845	450	75	35	800		0.15
850	15	300	23	<20		<0.15
855	5	200	30	100		<0.15
860	5	150	40	125		<0.15
865	45	110	46	150		0.15
870	5	60	70	<20		<0.15
875	5	80	53	<20		<0.15
880	5	80	87	70		<0.15
885	200	150	180	100		<0.15
890	30	120	53	150		<0.15
895	115	150	140	70		<0.15
900	110	30	100	40		<0.15
905	20	120	230	100		<0.15
910	10	330	140	70		<0.15

N.B. Limits of detection:

Cu : 5 p.p.m.
Pb : 5 p.p.m.
Zn : 2 p.p.m.
Bi : 20 p.p.m.
Mo : 40 p.p.m.
Au : 0.15 dwts/ton

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WAGON DRILL GEOCHEMICAL RESULTS

(Cu, Pb, Zn, Bi, Co and Ni values in p.p.m.)

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H.1						
0 - 10	30	30	20	40	<10	10
20	25	40	29	60	10	<10
30	20	95	27	<40	10	"
40	30	50	17	<40	10	"
50	60	10	17	<40	<10	"
60	55	20	24	<40	10	"
70	30	10	16	40	<10	"
80	25	10	14	"	"	"
90	40	10	21	"	"	"
100	40	10	26	"	"	"
110	30	<10	21	"	"	"
120	40	10	23	40	"	"
130	30	10	17	<40	"	"
140	30	10	23	40	"	"
150	30	20	17	<40	"	"
160	30	20	17	"	"	"
170	40	10	23	"	<10	<10
180	45	10	27	"	10	10
190	55	20	37	"	25	15
200	55	<10	35	"	30	10
210	40	10	30	"	25	10
220	40	10	29	"	20	<10
	50	20	35	"	10	<10
	75	10	60	"	10	15
		10	79	"	10	25
W.D.H.9:						
0 - 10	10	20	13	<40	<10	10
20	5	<10	9		<10	<10
30	10	<10	12	"	"	"
40	10	"	14	"	"	"
50	10	"	14	"	"	"
60	10	"	16	"	"	"
70	5	"	14	"	"	"
80	10	"	17	"	"	"
90	10	10	23	"	"	"
100	5	10	26	<40	<10	<10
110	10	10	20	"	"	"
120	5	10	21	"	"	"
130	10	10	23	"	"	"
140	15	<10	26	"	"	10
150	20	10	24	"	"	10
W.D.H.10:						
0 - 10	15	<10	16	<40	<10	<10
20	5	"	10	"	"	"
30	5	"	13	"	"	"
40	5	"	16	"	"	"
50	5	"	17	"	"	"

..23/

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
60	5	<10	17	<40	<10	<10
70	5	"	17	40	"	"
80	5	"	22	<40	"	"
90	5	<10	21	"	"	"
100	10	10	20	"	"	"
110	10	20	21	"	"	"
120	10	10	20	"	"	"
130	15	10	30	"	"	"
140	15	10	29	"	"	"
150	10	20	49	"	"	"
W.D.H.11:						
0 - 10	10	20	13	<40	<10	<10
20	25	30	20	"	"	"
30	30	30	23	"	"	"
40	30	20	20	"	"	"
50	70	20	17	"	"	"
60	35	10	13	"	"	"
70	35	20	12	"	"	"
80	15	10	12	"	"	"
90	30	20	17	"	"	"
100	30	10	30	"	"	10
110	30	20	21	"	"	10
120	30	20	16	40	"	<10
130	30	10	29	<40	"	"
140	45	10	17	"	"	"
150	30	20	26	"	"	"
W.D.H.12:						
0 - 10	15	10	17	<40	<10	<10
20	25	20	16	"	"	"
30	15	30	115	"	"	"
40	10	30	23	"	"	"
50	25	30	17	"	"	"
60	20	60	16	"	10	"
70	25	60	12	"	<10	"
80	45	95	17	"	"	"
90	40	40	17	40	"	"
100	20	40	21	"	"	"
110	10	20	52	"	"	10
W.D.H.13:						
0 - 10	10	80	12	40	<10	<10
20	10	95	14	<40	"	"
30	10	135	13	"	"	10
40	10	115	21	"	"	10
50 - 60	5	230	13	40	"	10
70	10	145	12	"	"	<10
80	10	145	14	"	"	"
90	25	95	17	"	"	"
100	20	40	16	"	"	"
110	55	40	46	"	"	10
120	50	30	29	"	"	<10

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
130	20	30	20	40	<10	<10
140-150	30	10	29	"	"	"
W.D.H.14:						
0 - 10	15	95	12	40	<10	<10
20	15	80	17	"	"	"
30	10	80	12	"	"	"
40 - 50	10	125	13	"	"	"
60	15	155	20	"	"	"
70	10	155	27	"	"	"
80	10	125	12	"	"	"
90	20	110	17	"	"	"
100	20	45	15	"	"	15
110	15	35	25	"	"	<10
120	30	35	18	"	"	10
130	20	15	16	<40	"	<10
140	25	15	18	<40	<10	<10
150	30	15	18	"	"	10
160	25	<10	17	"	"	<10
170	20	15	17	"	"	"
180	5	10	26	"	"	"
190	25	10	25	"	"	"
200	15	65	12	"	"	"
W.D.H.18:						
0 - 10	10	15	14	"	"	"
20	5	10	6	"	"	"
30	10	15	11	"	"	"
40	15	10	14	"	"	"
50	15	10	12	"	"	"
60	20	10	14	"	"	"
70	25	10	14	40	"	"
80	20	10	8	40	"	"
90	20	10	11	<40	"	"
100	20	10	11	"	"	"
110	25	15	12	"	"	"
120	50	10	14	"	25	25
130	45	10	14	"	30	25
140	5	10	14	"	20	10
150	5	"	17	"	10	10
W.D.H.19:						
0 - 10	20	10	9	<40	<10	<10
20	20	"	9	"	"	"
30	20	"	8	"	"	"
40	15	"	8	"	"	"
50	15	<10	8	"	"	"
60	10	10	6	"	"	"
70	20	15	15	"	"	"
80	10	10	23	40	"	"
90	30	10	59	40	"	"
100	20	10	32	<40	"	15
110	20	10	23	"	"	10

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
120	20	15	23	<40	20	20
130	10	15	14	"	15	10
140	15	10	19	"	30	20
150	15	15	21	"	25	25
W.D.H.20:						
0 - 10	40	15	21	60	10	20
20	20	15	14	<40	<10	<10
30	15	10	11	40	"	"
40	20	"	12	"	"	<10
50	15	"	16	"	"	15
60	10	"	12	"	"	10
70	10	"	14	"	"	10
80	15	15	14	<40	"	"
90	15	10	19	"	"	20
100 - 110	20	10	21	"	25	15
120	10	10	16	"	20	20
130	20	15	30	"	90	40
140	15	15	16	"	20	20
150	10	10	18	"	20	20
W.D.H.21:						
0 - 10	10	15	8	40	<10	10
20	5	10	5	"	"	<10
30	5	<10	5	"	"	"
40	5	10	8	"	"	"
50	20	10	21	"	"	"
60	40	15	55	60	10	15
70	35	10	29	40	<10	10
80	10	<10	25	<40	"	<10
90	15	10	35	"	"	10
100	15	<10	23	"	"	10
110	15	<10	19	"	"	<10
120	15	<10	21	"	15	10
130	10	10	23	"	20	20
140	10	10	25	"	30	30
150	30	10	25	"	40	25
W.D.H.22:						
0 - 10	15	<10	16	<40	<10	10
20	10	10	9	"	"	10
30	15	10	9	"	"	<10
40	10	10	11	"	"	"
50	20	10	14	"	"	"
60	20	15	12	"	"	"
70	20	10	8	"	"	"
80	25	15	14	"	"	"
90	20	15	11	<40	10	10
100	50	"	49	40	15	10
110	35	"	42	<40	10	20
120	20	"	26	"	<10	15
130	20	15	26	"	10	30
140	15	35	26	"	25	25
150	15	10	26	"	20	15

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. 23:						
0 - 10	15	<10	11	<40		
20	10	"	14	"		
30	20	"	10	"		
40	10	10	3	"		
50	25	"	18	"		
60	10	"	18	"		
70	20	"	26	"		
80	25	"	20	"		
90	45	"	22	"		
100	25	"	21	"		
110	30	"	17	"		
120	40	"	25	"		
130	40	"	29	"		
140	5	"	33	"		
150	25	"	20	"		
W.D.H. 27:						
0 - 10	5	40	29	<40		
20	<5	30	14	"		
30	<5	40	18	"		
40	<5	30	13	"		
50	5	50	16	"		
60	10	50	19	"		
70	10	30	7	"		
80	15	50	32	"		
90	25	70	39	"		
100	15	60	65	"		
110	60	230	62	"		
120	70	230	47	"		
130	40	80	49	"		
140	55	50	75	"		
150	60	10	58	<40		
160	50	100	52	"		
170	35	10	53	"		
180	15	10	62	"		
190	45	10	57	"		
200	50	<10	50	"		
W.D.H. 28:						
0 - 10	30	40	17	<40		
20	70	60	25	"		
30	10	60	19	"		
40	15	80	22	"		
50	25	70	31	"		
60	25	70	26	"		
70	35	140	38	"		
80 - 90	40	20	27	"		
100	70	10	35	"		
110	70	10	34	"		
120	50	10	31	"		
130 - 140	45	10	26	"		
150	30	10	19	"		

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. 29:						
0 - 10	15	<10	13	<40		
20	30	20	13	"		
30	25	20	19	"		
40	45	20	19	"		
50	20	30	20	"		
60	25	20	26	"		
70	20	10	22	"		
80	25	20	19	"		
90	30	10	20	"		
100	45	20	17	"		
110	45	10	16	"		
120	40	<10	23	"		
130	25	10	20	"		
140	30	<10	19	"		
150	30	<10	20	"		
W.D.H. 30:						
0 - 10	10	<10	13	<40		
20	< 5	<10	14	"		
30	5	10	19	"		
40	< 5	10	16	"		
50	10	10	18	"		
60	10	20	23	"		
70	10	10	12	"		
80	15	<10	18	"		
90	10	10	20	"		
100	25	10	15	"		
110	10	10	16	"		
120	10	<10	22	"		
130	10	10	22	"		
140	75	10	19	"		
150	30	10	22	"		
190 - 200	10	<10	33	"		
W.D.H. 31:						
0 -10	15	40	15	<40		
20	30	30	18	"		
30	25	30	12	"		
40	30	20	27	"		
50	< 5	20	22	"		
60	< 5	10	13	"		
70	10	<10	17	"		
80	10	<10	16	"		
90	10	<10	12	"		
100	15	10	15	"		
110	5	20	68	"		
120	10	<10	12	"		
130	25	<10	10	"		
140	40	10	16	"		
150	45	<10	15	"		

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. 32:						
0 - 10	55	30	22	<40		
20	25	10	17	"		
30	10	10	8	"		
40	5	<10	10	"		
50	10	<10	12	"		
60	10	10	17	"		
70	20	10	21	<40		
80	<5	<10	16	"		
90	5	<10	12	"		
100-110	45	<10	12	"		
120	40	<10	11	"		
130	45	<10	11	"		
140	40	20	13	"		
W.D.H. 33:						
0 - 10	10	60	10	<40		
20	25	40	21	"		
30 - 40	5	<10	15	"		
50	15	120	10	"		
60	40	40	17	"		
70	45	40	15	"		
80	15	20	20	"		
90 - 100	25	60	16	"		
120 - 130	25	30	15	"		
140	25	30	12	"		
150	35	20	16	"		
W.D.H. 34:						
0 - 10	20	30	7	<40		
20	10	50	7	"		
30 - 40	20	10	16	"		
50	25	80	16	"		
60	15	90	19	"		
70	12	140	19	"		
80	15	200	17	"		
90	35	130	17	"		
100	81	140	27	"		
110	73	190	32	"		
120	77	140	21	"		
130	90	105	27	"		
140	35	50	26	"		
150	42	25	26	"		
W.D.H. 35:						
0 - 10	45	35	26	"	<10	<10
20	25	25	19	"	"	"
30	35	35	20	"	"	"
40	110	125	13	"	"	"
50	75	45	19	<40	<10	<10
60	210	75	16	"	"	"
70	240	630	15	40	10	"
80	285	225	17	40	"	"

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
90	170	125	10	80	10	<10
100	135	130	11	50	"	"
110	335	85	24	40	"	15
120	110	50	20	<40	"	20
130	125	50	20	40	10	10
140	90	95	15	40	10	"
150	95	60	15	50	15	"
W.D.H. 36:						
0 - 10	35	60	14	<40		
20	23	25	15	"		
30	35	25	22	"		
40	12	25	22	"		
50	15	15	22	"		
60	57	25	25	"		
70	30	25	20	"		
80	20	15	16	"		
100	45	25	24	"		
110	23	<10	19	"		
120	35	15	20	"		
130	42	15	16	"		
140	179	25	40	"		
W.D.H. 37:						
0 - 10	23	<10	11	<40		
20	5	<10	21	"		
30	20	15	37	"		
40	12	15	18	"		
50	9	<10	21	"		
60	23	<10	25	"		
70	38	15	80	"		
80	23	15	36	"		
90 - 100	23	<10	28	"		
110	27	15	31	"		
120	27	<10	22	"		
130	23	<10	24	"		
140	27	<10	28	"		
150	38	15	26	"		
W.D.H. 38:						
0 - 10	12	<10	13	<40		
30 - 40	15	<10	22	"		
50	20	<10	18	"		
60	15	<10	15	"		
70	45	15	19	"		
80	38	<10	15	"		
90	45	<10	24	"		
100	45	<10	24	"		
110	42	15	17	"		
120	38	15	20	"		
130	42	<10	17	"		
140 - 150	20	<10	26	"		

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. 39:						
0 - 10	5	<10	12	<40		
20	5	<10	12	"		
30	10	"	13	"		
40	10	"	12	"		
50	20	"	20	"		
60	25	"	18	"		
70	10	"	10	"		
80	25	"	17	"		
90	10	"	12	"		
100	5	"	43	"		
110	40	"	<2	"		
130 - 140	20	"	32	"		
W.D.H. 40:						
0 - 10	500	10	19	<40		
20	170	10	13	"		
30	80	<10	13	"		
40	40	10	45	"		
50	35	<10	28	"		
60	20	10	28	"		
70	15	70	20	"		
80	10	10	27	"		
90	25	<10	18	"		
100	35	10	34	"		
110	15	10	27	"		
120	5	<10	20	"		
130	20	10	25	"		
140	5	10	25	"		
150	15	<10	30	"		
W.D.H. 41:						
0 - 10	6	10	20	<40		
20	<5	"	21	"		
30	10	"	19	"		
40 - 50	6	"	15	"		
60	14	"	15	"		
70	20	"	18	"		
80	14	"	24	"		
90	25	"	28	"		
100	25	"	43	"		
110	16	"	34	"		
120	16	"	23	"		
130	10	"	26	"		
140	6	20	30	"		
150	14	10	33	"		
W.D.H. 42:						
0 -10	14	10	17	<40		
20	14	10	12			
30	20	10	27	"		
40	16	10	39	"		
50	14	10	25	"		

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
60	14	20	27	40		
70	20	20	27	"		
80	16	10	22	"		
90	10	10	18	"		
100	16	10	27	"		
110	16	10	19	"		
120	14	10	24	"		
130	31	10	33	"		
140	14	10	43	"		
150	14	10	34	"		
W.D.H. 43:						
0 - 10	6	<10	10	<40		
20	18	10	12	"		
30	16	10	15	"		
40	10	<10	14	"		
50 - 60	16	<10	25	"		
70	25	10	26	"		
80	20	10	19	"		
90	20	20	17	"		
100	15	10	17	<40		
110	31	10	23	"		
120	40	20	71	"		
130	85	30	130	"		
140	31	20	96	"		
150	45	20	81	"		
W.D.H. 44:						
0 - 10	<5	20	18	<40		
20	18	20	30	"		
30	<5	20	19	"		
40	<5	20	15	"		
50	18	10	53	"		
60	20	30	61	"		
70	15	10	14	"		
80	10	10	15	"		
90	35	20	17	"		
100	20	20	15	"		
110	25	30	15	"		
120	56	30	18	"		
130	35	20	18	"		
140	51	30	18	"		
150	25	10	12	"		
W.D.H. 50:						
0 - 10	14	100	14	<40		
20	27	60	27	"		
30	10	128	16	"		
40	10	140	19	"		
50	14	240	16	"		
60	16	200	25	"		
70	45	190	44	"		
80	53	128	23	"		

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Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
90	32	54	11	<40		
100	32	43	20	"		
110	28	54	26	"		
120 - 130	35	12	24	"		
140	45	9	31	"		
150	55	12	38	"		
160	45	9	50	"		
170	45	9	56	"		
180	55	9	51	"		
190	60	22	78	"		
200	55	22	51	"		
210	45	22	42	40		
220	70	22	51	<40		
W.D.H. 51:						
0 - 10	18	80	19	<40		
20	10	60	11	"		
30	15	54	11	"		
40	6	50	9	"		
50	10	40	12	"		
60	14	128	17	"		
70	16	40	17	"		
80	25	54	25	"		
90	20	30	12	"		
100	20	30	14	"		
110	14	20	12	"		
120	25	22	31	"		
130	16	10	18	"		
140	14	10	15	"		
150	16	10	15	"		
W.D.H. 52:						
0 - 10	6	10	12	<40		
20	6	20	28	"		
30	6	20	18	"		
40	6	20	25	"		
50	10	20	23	"		
60	31	20	19	"		
70	43	20	23	"		
80	40	10	23	"		
90	10	10	10	"		
100	6	10	12	"		
110	10	10	14	"		
120	10	10	12	"		
130	10	20	15	"		
140	31	20	25	"		
W.D.H. 53:						
0 -10	10	10	11	<40		
20	6	20	14	"		
30	6	10	15	"		
40	10	10	13	"		
50	20	10	11	"		
60	10	10	9	"		

..33/

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
70	43	20	23	<40		
80	31	20	24	"		
90	40	70	17	"		
100	25	30	17	"		
110	40	30	12	40		
120	40	20	27	"		
130	16	<10	16	"		
140	31	10	16	"		
150	25	10	13	"		
W.D.H. 54:						
0 - 10	5	30	20	<40		
20	5	20	19	"		
30	<5	10	14	"		
40	5	20	23	"		
50	30	90	80	"		
60	5	20	10	"		
70	20	30	21	"		
80	20	30	19	"		
90	30	20	24	"		
100	25	20	22	"		
110	35	20	17	"		
120	50	30	22	"		
130	57	20	22	"		
140	70	10	41	"		
150	75	20	38	"		
W.D.H. 66:						
0 - 10	65	20	20	<40		
20	5	30	23	"		
30	<5	20	14	"		
40	25	10	21	"		
50	<5	20	26	"		
60	<5	30	20	"		
70	<5	20	12	"		
80	<5	10	17	"		
90	<5	20	20	"		
100	15	10	25	"		
110	20	10	25	"		
120	30	10	26	"		
130	85	20	31	"		
140	40	10	40	"		
150	18	20	37	"		
W.D.H. 67:						
0 - 10	14	10	15	<40		
20	6	10	16	"		
30	14	10	21	"		
40	45	10	30	"		
50	31	10	15	<40		
60	31	10	20	"		
70	14	10	14	"		
80	16	10	21	"		

..34/

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
90	35	10	18	<40		
100	20	<10	17	"		
110	27	10	43	"		
120	16	20	32	"		
130	14	10	37	"		
140	15	30	29	"		
150	6	10	26	"		
W.D.H. 68:						
0 - 10	15	50	8	<40		
20	20	80	10	"		
30	65	105	15	"		
40	23	60	16	"		
50	38	95	21	"		
60	35	150	16	"		
70	23	95	15	"		
80	38	120	19	"		
90	90	120	16	"		
100	69	95	26	"		
110	53	70	17	"		
120 - 130	105	60	36	"		
140	25	20	23	"		
150	30	20	18	"		
W.D.H. 69:						
0 - 10	75	130	18	<40	10	10
20	55	140	16	"	<10	<10
30	60	155	20	"	"	"
40	65	50	17	"	"	"
50	30	35	20	"	"	"
60	30	220	24	"	<10	<10
70	145	425	59	"	15	10
80	50	85	11	"	<10	10
90	65	95	13	"	"	"
100	170	125	18	"	"	20
110	65	85	19	"	"	10
120	60	50	20	"	10	"
130	50	25	41	"	<10	20
140	20	15	29	"	20	10
150	45	15	30	"	25	10
W.D.H. 70:						
0 - 10	20	30	37	<40		
20	25	40	13	"		
30	35	30	15	"		
40 - 50	20	20	26	"		
60	10	40	22	"		
70	45	130	23	"		
80	15	70	23	"		
90	25	60	18	"		
100	50	80	25	"		
110	25	20	16	"		
120	18	10	15	"		
130	20	20	16	"		
140	35	20	17	"		
150	50	30	33	"		

...35/

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. 71:						
0 - 10	18	40	10	<40		
20	15	40	11	"		
30	25	30	17	"		
40	40	10	22	"		
50	20	10	21	"		
60	45	50	20	"		
70	40	200	19	"		
80	30	150	19	"		
90	35	120	26	"		
100	25	50	18	"		
110	30	20	16	"		
120	35	20	17	"		
130	90	30	31	"		
140	85	30	19	"		
150	40	20	16	"		
W.D.H. 72:						
0 - 10	35	60	13	<40		
20	30	90	11	"		
30	40	180	15	"		
40	75	150	14	"		
50	55	115	13	"		
60	45	40	19	"		
70	50	30	16	"		
80	75	20	16	"		
90	80	30	29	"		
100	56	10	29	"		
110	30	10	28	<40		
120	50	20	31	"		
130	20	70	26	"		
140	56	100	22	"		
W.D.H. 73:						
20 - 30	23	50	13	<40		
40	40	81	20	"		
50	25	160	15	"		
60	75	130	31	"		
70	35	50	20	"		
80	65	20	18	"		
90	45	10	22	"		
100	40	20	22	"		
110	60	30	26	"		
120	80	10	22	"		
130	100	50	20	"		
140	95	50	20	"		
150	50	50	15	"		

..36/

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. '74:						
0 - 10	40	20	16	<40		
20	35	20	15	"		
30	25	60	20	"		
40	25	20	17	"		
50	25	10	17	"		
60	20	10	14	"		
70	10	10	13	"		
80	75	30	37	"		
90	180	<10	42	"		
100	135	10	35	"		
110	50	10	20	"		
120	100	30	35	"		
130	95	10	28	"		
140	95	10	27	"		
150	65	<10	16	"		
W.D.H. 75:						
0 - 10	35	<10	12	<40		
20	30	20	14	"		
30	40	20	12	40		
40	30	10	19	<40		
50	25	10	26	"		
60	15	20	23	"		
70	20	60	30	"		
80	25	110	22	"		
90	20	20	27	<40		
100	25	<10	20	"		
110	35	<10	18	"		
120	35	15	23	"		
130	35	25	18	"		
140	52	<10	30	"		
W.D.H. 76:						
0 - 10	30	60	20	<40	<10	<10
20	15	75	11	<40	"	"
30	15	60	12	<40	"	"
40	185	155	56	200	40	15
50	30	125	20	40	15	10
60	25	95	22	<40	10	<10
70	30	60	21	<40	"	"
80	95	340	67	40	"	10
90	125	210	48	<40	<10	"
100	100	165	66	40	"	<10
110	70	105	73	40	"	"
120	45	75	60	<40	"	"
130	90	95	52	50	"	"
140	15	95	10	<40	<10	"
150	125	35	31	"	20	"
160 - 170	65	15	31	"	<10	<10
180	100	10	50	"	40	20

..37/

Hole No./Feet	Cu	Pb	Zn	Bi	Co	Ni
W.D.H. 77:						
0 - 10	55	50	27	<40	<10	<10
20	40	60	20	"	"	<10
30	70	35	36	"	"	10
40	65	75	28	"	"	<10
50	30	25	20	"	"	"
60	30	35	20	"	"	"
70	265	85	27	"	"	"
80 - 90	50	60	34	"	"	"
100	60	105	33	"	"	"
110	65	115	40	<40	<10	<10
120	90	60	35	100	"	"
130	80	45	40	40	"	"
140 - 150	65	85	34	260	"	"
160	80	125	45	490	"	"
170	185	75	45	260	10	10
W.D.H. 79:						
0 - 10	35	160	18	<40		
20	23	200	19	"		
30	15	140	23	"		
40	12	150	31	"		
50	12	120	43	"		
60	26	95	56	"		
70	20	80	51	"		
80	52	140	39	"		
90	42	95	47	"		
100	49	130	46	"		
110	52	120	56	"		
120	52	40	42	"		
130	65	25	46	"		
140	38	40	61	"		
150	57	15	62	"		
160	69	15	62	"		
170	116	<10	84	"		
180	56	<10	50	"		
190	45	<10	48	"		
200	52	<10	71	"		
W.D.H. 80:						
0 - 10	20	25	24	<40		
20	23	80	13	"		
30	20	70	12	"		
40	23	80	20	"		
50	15	70	16	"		
60	42	130	18	"		
70	23	50	14	"		
80	30	70	18	"		
90	73	60	23	"		
100	77	70	20	"		
110	98	60	21	"		
120	81	40	26	"		
130	57	40	36	"		
140	57	25	29	"		
150	38	25	28	"		
160	65	25	29	"		
170	215	25	48	"		

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NB.

Wagon Drill Sites 15, 24, 25, 48, 49, 64, 65, 78 were not drilled.

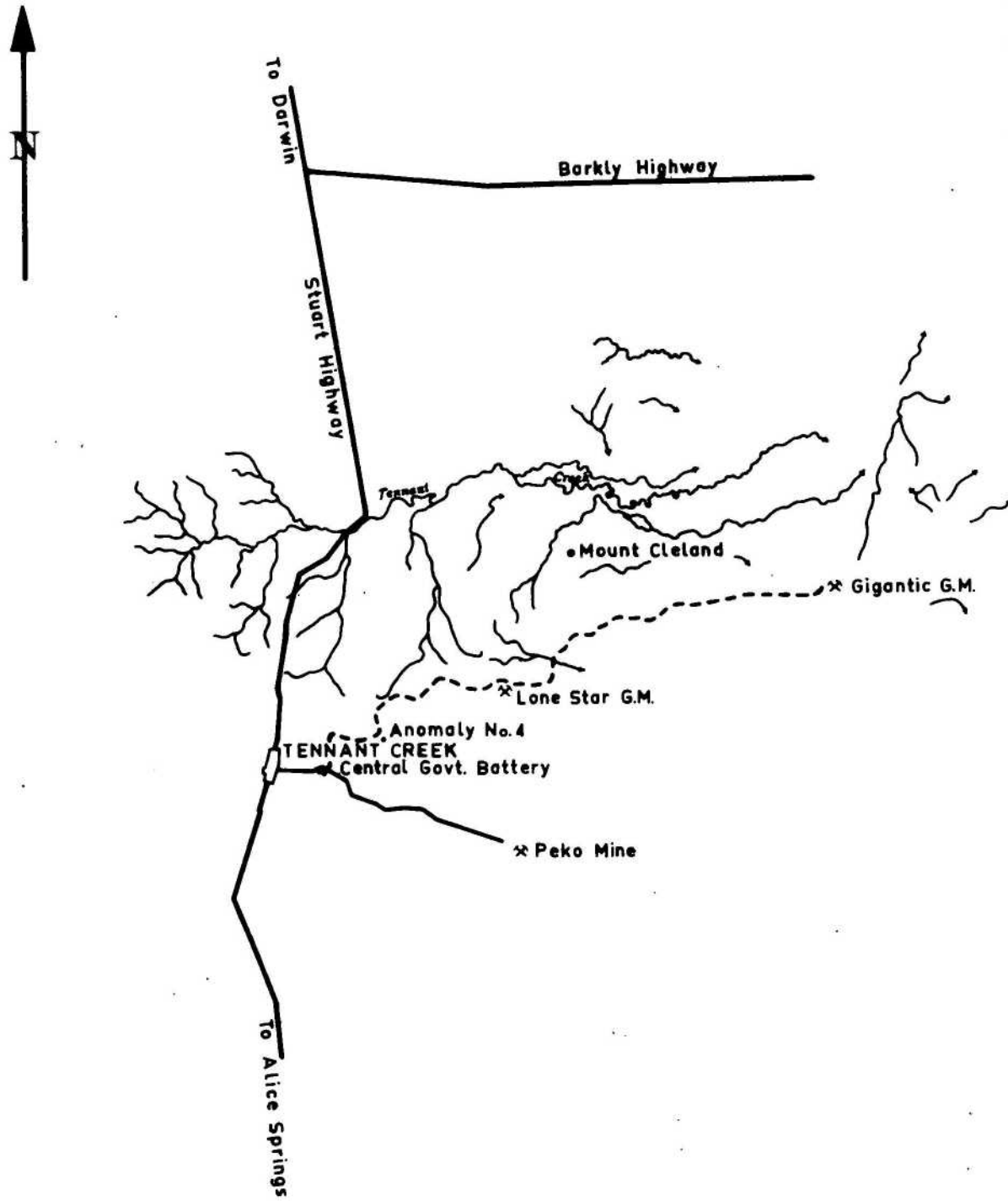
Samples from Wagon Drill Holes 2 - 8 were incorrectly labelled and were not submitted for assay.

No samples could be located for Wagon Drill Holes 16, 17, 26, 45, 47, 55 - 63.

Limits of Detection:

Cu :	5 p.p.m.
Pb :	10 p.p.m.
Zn :	2 p.p.m.
Bi :	40 p.p.m.
Co :	10 p.p.m.
Ni :	10 p.p.m.

PLATE 1



LOCALITY MAP

BURNT SHIRT AREA – ANOMALY No. 4

TENNANT CREEK

5 0 5 Miles

SCALE 1:250,000

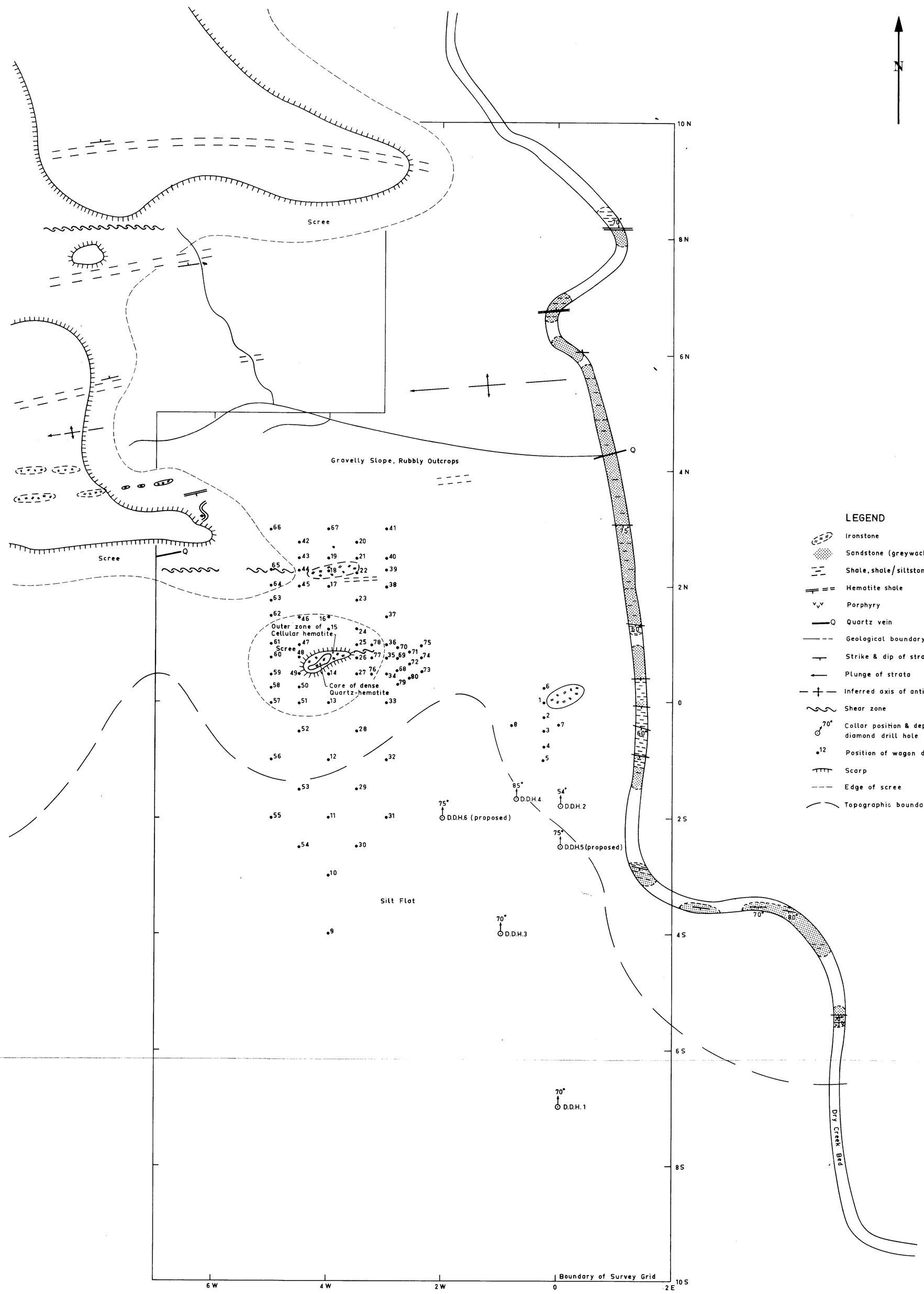
COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN NOV. 1969

G69/107E

To accompany Record 1971/50

E53/A14/197

BINDING.



GEOLOGY – BURNT SHIRT AREA

ANOMALY No. 4

100 50 0 100 200 Feet

SCALE 1" = 100'

G69/108B

COMPILED BY RESIDENT GEOLOGICAL SECTION
DRAWN BY MINES & WATER RESOURCES BRANCH DRAFTING OFFICE DARWIN NOVEMBER 1969

To accompany Record 1971/50

E 53/A14/198

PLATE 2